THE IRON TRADE REVIEW

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THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

An easing of the strain in foundry pig iron in the Central West has come in the past week, and prices are about 50 cents a ton lower than at the close of December. There will be no regret at the checking of an advance conceded to have been more rapid than was consistent with a healthy market. This development is in line with what has taken place in the market for Bessemer iron, the Steel Corporation's purchase of 25,000 tons pending one week ago, having been made at the equivalent of $15.50 Valley furnace, whereas $16 had been generally asked. The Bessemer Pig Iron Association had the opportunity to sell the 25,000 tons, but refused to meet the Steel Corporation figure at which the sale, including 12,000 tons of speculative iron, was finally made. Low phosphorus pig iron has advanced under recent good sales and is now close to the point permitting imports to reach Pittsburg. Low phosphorus scrap material has reached prices attracting shipments from Alabama into the Pittsburg district.

The present lull in pig iron buying is the result in part of the fact that producers have little iron to sell for delivery before April 1 and consumers need to buy little Most of recent buying has been for delivery in the second quarter and prices have shown more conservatism on the part of sellers. Production of pig iron is now at a rate above 20,000,000 tons a year, in the light of the December blast furnace statistics, and if the reduction of 120,000 tons in stocks in December should be repeated in January the record of consumption is now being exceeded. While the melting of steel-making pig iron is now at a record rate, it is certain that the foundries of the country have not yet reached their record output. Pipe works are doing excellently and there is again a large operation of Pittsburg district foundries dependent on rolling mills and steel works. While the jobbing foundry interest is much more active than in a year there is still some slack capacity.

Southern blast furnaces hold firmly to recent prices on foundry iron, but at $13.75, and in some cases $14, asked, are selling little. The lower grades are especially in demand, and forge iron at $12.75 Birmingham is still out of line.

Raw materials have been an active factor in the Northern market. Sales of Lake Superior ore at 50 cents above last year's prices have been freely made, and several million tons are involved in the transactions of the week, with indications that by early February the bulk of the merchant ores to be mined in 1905 will have been taken up. Term contracts are so great a factor that the season price is not of the same significance as heretofore. Estimates commonly figure on 28,000,000 tons or upward for lake ore shipments this year, in view of the enormous rate of current pig iron production and consumption. The coke situation is somewhat easier and $2.50 blast furnace coke can be had on contracts for the first half. The Lackawanna Steel Co. is reported to be a considerable buyer of coke for the balance of the year. Blast furnacemen in the Central West are confronted with a renewal of the demand of the workers for an 8-hour day. In lieu of the short day, which cannot be granted, a restoration of the wages prevailing before the 10 percent cut of last year is probable.

The large steel mills are run at full capacity and still premiums are paid for billets and sheet bars. The sheet and tin plate production of the largest interest is at a record rate, all its 242 tin plate mills and its 163 sheet mills being now active. Large sales for delivery over the first half of the year have been made, a procedure which the independent producers could not follow owing to uncertainty as to the cost of their steel.

New tonnage has come in the past week to the structural works, railroad bridge building furnishing much of it. In the Pittsburg district 20,000 tons was booked by erecting shops. Two line pipe contracts amounting to 30,000 tons were taken by the leading producer of wrought pipe.

Rail business comes up slowly, but 70,000 tons was taken in the Chicago district. Car orders are now said to foot up 120,000, or nearly twice the number built in 1904.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
429 PARK BUILDING, Jan. 18.

The lull in the pig iron trade has brought out slightly lower prices on foundry iron, but other grades have not been affected and the finished lines show greater strength than at any time in the past year. The light buying is only what was expected after a period of heavy contracting, and there are no indications of lower prices immediately in any lines.

This week the American Sheet & Tin Plate Co. is operating 100 percent of its sheet and tin plate producing capacity. This is the first time since the formation of the sheet and tin plate consolidations that every mill of the company has been active at any one time. The company operates 242 tin mills and 163 sheet mills, and while it is generally conceded that this record cannot be continued through the year, the tonnage of sheets and tin plate on the company's books is greater than ever in its history and insures full operation well through the first half of the year. The policy adopted, of permitting jobbers and consumers to contract for six months' or a year's requirements, with liberal allowances on tonnages, had much to do with the accumulation of the sheet and tin plate business. This move lost such business to the independent manufacturers who are unable to take these long time contracts on account of the uncertainty of the price and their supply of raw material. On galvanized sheets the independent manufacturers are practically unable to compete. Since last summer spelter has advanced $28 a ton, increasing the cost of producing galvanized sheets $4 a ton. With the advances in sheet bars the total increase in the cost of producing galvanized sheets is over $7 a ton and yet the

advance in the finished product only amounts to $5 in that period. A large amount of prompt business both in sheets and tin plate is being offered which is being taken care of by the independent mills, but with an easing up of the demand the competition among the independents will grow keener, while the American Sheet & Tin Plate Co. will be comfortably fixed.

The United States Steel Corporation last week purchased 25,000 tons of Bessemer iron from W. P. Snyder & Co. for January delivery at a price equivalent to $15.50 at the furnace. This price for this same quantity of iron was offered the Bessemer Pig Iron Association but the furnaces refused to sell below $16. Half of the iron taken had been offered in the market recently by speculators and its purchase removes practically all of the speculative Bessemer from the market. The market quotation today is $16 at the furnace. The remainder of the iron is to be shipped from the furnaces of the Shenango Furnace Co., Sharpsville. Of the speculative iron purchased by W. P. Snyder & Co. 10,000 tons comes from the furnace at Detroit. Outside of this transaction there has been little doing in the iron market, and the high prices recently quoted by some producers of Northern foundry iron have disappeared.

The two large contracts for line pipe that have been under negotiation for some time have finally been closed. They amount to nearly 30,000 tons. The buying of line pipe last year broke all previous records and the new year already gives signs of exceeding that record.

The Lackawanna Steel Co. is again in the market for coke and expects to close within a few days for a large tonnage for delivery the remainder of the year. In addition to the large purchase made in November last year for shipment in the next three years, a contract for Connellsville coke for delivery in the remainder of the year, amounting to about 200,000 tons, was recently closed at $2.35. Foundry coke for early shipment is now at $2.75 to $3, while prompt furnace coke is held at about the same price, although for first half delivery $2.50 can be done.

The demand for low phosphorus iron is heavy and producers are asking from $21.50 to $22. Such iron has already been brought into the East from abroad and can be sold in this market at $22.50, so that a further advance in the domestic price will again result in the importation of foreign iron into this market.

Pig Iron.—Outside of the sale of 25,000 tons of Bessemer iron to the United States Steel Corporation there have been no large transactions during the week. The purchase of this Bessemer, even though it is below the general furnace quotation, will strengthen the Bessemer iron situation, as it has taken about 12,000 tons of iron out of the market that has been held by speculators. The demand for charcoal iron has been heavy and numerous sales have been made. Roll foundries are operating at their capacity and are buying iron for future requirements. The demand for foundry is not heavy and the market has reacted. Sales have been made at $16 at Valley furnaces for second quarter delivery. Higher prices are paid for prompt iron. Forge iron continues at $16.25 to $16.50 Pittsburg, while Bessemer is quoted at $16.85. One Isabella stack is the only idle blast furnace of the United States Steel Corporation in this and Valley districts. The Zanesville stack of the Carnegie Steel Co. continues in idleness and will perhaps be never operated again. The steel works of the Carnegie Steel Co., despite this tremendous production, are having difficulty in securing an adequate supply of iron and from present indications Bessemer iron will again have to be purchased in the open market next month. Southern iron continues firm at $13.75 to $14 for No. 2, for delivery the first quarter. The largest inquiry now in the market calls for 3,000 tons of forge, although the inquiries for foundry iron are more numerous this week than they have been thus far this year. We revise quotations as follows:

Bessemer, Valley	$ 16 00
Bessemer, Pittsburg	16 85
No. 1 Foundry	17 25 to 17 50
No. 2 Foundry	16 85 to 17 35
Gray Forge, Pittsburg	16 25 to 16 50
Basic, Valley	16 00 to 16 15
Basic, Pittsburg	16 85 to 17 00

Steel.—Premiums of from $2 to $2.50 a ton are still being asked on billets and bars, and consumers are clamoring for deliveries. Several large independent producers are taking orders on billets, and independent finishing mills are having considerable trouble in securing raw material. We quote official prices as follows: Bessemer and open-hearth billets, 4 x 4 in., and slabs, up to and including 0.25 carbon, $21, f. o. b. mill, Pittsburg, with actual freight to points of delivery; 0.26 and including 0.60 carbon, $1 advance; 0.61 to 1.00 carbon, $2 advance. Billets smaller than 4 x 4 in., $2 advance; sheet and tin bars, $23; cut bars, $23.50; forging billets, $23. Bessemer and open-hearth steel rods are held at $30.50 to $31.

Ferro-Manganese.—Domestic ferro is now quoted at $45.50 to $46, for 80 percent, delivered at any point east of the Mississippi. Foreign ferro is offered in this market at $45, one sale having been recently made at $44.50 for 300 tons.

Spelter.—Spelter prices continue to advance, and prime Western grades are held at 6.35c Pittsburg, in carload lots. Since last summer this product has advanced $28 a ton.

Muck Iron.—There have been no sales of muck iron during the week and neutral bars are held nominally at $28.50 to $28.85 Pittsburg.

Skelp.—Demand for both iron and steel skelp continues heavy. We quote grooved steel at 1.45c to 1.50c, and sheared at 1.55c to 1.60c. Grooved iron is held at 1.60c to 1.65c, and sheared at 1.70c to 1.75c.

Rails and Track Material.—The rail tonnage for the week has not been heavy, although a number of large buyers are expected in the market shortly. Large sales of spikes and track material have been made to the railroads during the week and spikes have advanced to $1.80. Light rails are not moving very rapidly and prices remain unchanged. We make the following quotations: Fifty lb. and over 500 tons, $28; car lots and less than 500 tons, $30; less than car lots, $32; light rails, 16-lb., $26 to $27; 20 lb., $25 to $26; 25 to 45 lb., $23 to $24. Angle bars, 1.25c; spikes, 1.80c to 1.85c.

Plates.—The Panhandle Railroad has placed an order with the Pressed Steel Car Co. for 4,000 steel cars and this company is now contracted ahead almost through the third quarter. The car companies now report that with the orders on their books and those in sight the car requirements thus far this year already total 120,000, which is double last year's output. But for the requirements of the steel car plants the plate market would be quiet. We make the following quotations: Tank plates, ¼ in. thick, 6¼ to 14 in., inclusive, 1.40c f. o. b. mill Pittsburg; over 14 in. up to 100 in., 1.50c. Extras are as follows per lb.: Flange and boiler steel, 10c; marine, A. B. M. A., and ordinary fire box, 20c; still bottom, 30c; locomotive fire box, 50c; plates over 100 in. up to 110 in. in width, not less than 5c per 100 lb. extra; plates 110 in. to 115 in. wide, not less than 10c extra; 115 to 120 in., 15c extra; plates 120 in. to 125 in. wide, not less than 25c extra; plates, 125 in. to 130 in., not less than 50c extra; plates 130 in. wide, not less

than $1 extra; plates 3-16 in. thick, $2 extra; gauges 7 and 8, $3 extra; No. 9, $5 extra. Five cents extra for less than carloads. Terms net cash in 30 days, and for all points of delivery in the United States except the Pacific Coast.

Bars.—Demand for iron bars is not as heavy as during the month of December and slightly lower prices are looked for. Specifications on iron bars continue heavy and all the mills are operating in full. We make the following quotations: Bar iron, 1.65c to 1.69¼c Pittsburg; hoops, 1.55c, and bands, 1.40c, both taking bar extras. Bessemer steel bars, 1.40c; open-hearth steel bars, 1.40c; plow and cultivator beams, 1.40c, net; channels, angles, zees and tees, under 3 in., 1.50c. The following differentials are maintained on steel: Less than 2,000 lb. of a size and not less than 1,000 lb., 10 cents advance; less than 1,000 lb. of a size, 30 cents advance.

Structural Material.—New orders for structural material continue heavy and since the first of the year Pittsburg concerns have taken orders for about 20,000 tons of work. The American Bridge Co. has closed a contract with the Norfolk & Western for 1,800 tons of girder and truss spans; 5,000-ton bridge across one of the tributaries of the Mississippi; 1,800-ton bridge for the Chicago, Milwaukee & St. Paul railroad; Washington, D. C., terminal station, 2,600 tons; Cincinnati warehouse, 3,500 tons; warehouse Marshall Field & Co., Chicago, 3,500 tons; Chronicle Building, San Francisco, 1,500 tons; number of steel buildings, Bellwood, Pa. The Pittsburg Steel Construction Co. has been awarded the contract for the erection of the superstructure of a bascule bridge at Buffalo calling for 1,500 tons. The McClintic-Marshall Construction Co. will furnish the material for the Majestic Theater, Chicago, 3,500 tons, and received a contract from the Northern Pacific railroad for 750 tons for bridge work. The market is unchanged as follows: Beams and channels up to 15 in., 1.50c; over 15 in., 1.60c; angles, 3 x 2 up to 6 x 6, 1.50c; zees, 1.40c; tees, 1.55c; angles from 3 to 16 in., 1.50c; universal and sheared plates, 6¼ to 14 in., inclusive, 1.40c; over 14 in., 1.50c base.

Sheets.—Every sheet and tin plate mill owned by the American Sheet & Tin Plate Co. is in operation this week for the first time in the history of the company. Independent sheet manufacturers are not taking contracts for more than 60-day delivery on account of the uncertainty of the raw material market, although the largest producer is taking contracts running over six months and a year. Black sheets, carload lots and over, are quoted as follows: No. 30, 2.70c; No. 29, 2.60c; No. 28, 2.30c; No. 27, 2.20c; Nos. 25-26, 2.15c; Nos. 23-24, 2.10c; Nos. 18-20, 2.05c; No. 16, 2c; Nos. 12-14, 1.95c; No. 9, 1.90c; No. 8, 1.85c. Galvanized: No. 30, 4.25c; No. 29, 3.75c; No. 28, 3.35c; No. 27, 3.15c; Nos. 25-26, 2.95c; Nos. 23-24, 2.75c; Nos. 18-20, 2.60c; No. 16, 2.45c.

Pipe and Tubes.—Two large pipe line contracts were placed this week aggregating nearly 30,000 tons. These are the largest pipe line contracts placed thus far this year, although the requirements promise to be heavy. Demand for merchant pipe continues heavy and the market is strong. Discounts to consumers, carload lots, f. o. b. Pittsburg, plus freight to destination according to Tube Rate Book, are as follows:

MERCHANT PIPE.

	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch	68½	52½	66½	50½
⅜ to 6 inches	76½	66½	75	65
⅜ and ½ inch	72½	60½	70½	58½
7 to 12 inches	71½	56½	70	54½
Extra Strong Plain Ends.				
⅛ to ⅜ inch	61½	49½	59½	47½
½ to 4 inches	65½	56½	66½	54½
4½ to 8 inches	64½	52½	62½	50½
Double extra strong plain ends, ½ to 8 inches	57½	46½	55½	44½

MERCHANT BOILER TUBES, CARLOADS, 22 FEET AND UNDER.

	Steel.	Iron.
1 to 1½ inches	48	45
1¾ to 2¼ inches	60	45
2½ inches	62	50
2¾ to 5 inches	68	57½
6 to 13 inches	60	46

Wire and Wire Nails.—The advance in wire products expected since the first of the year has not been announced and it is not believed that it will be made before next month. Mills are operating at their utmost capacity and the shipments are the heaviest in the history of the trade. New buying is light however. We quote: Wire nails, jobbers' carload lots, $1.75; retailers' carloads, $1.80, and less than carloads, $1.00; painted barb wire, $1.90 to jobbers in carloads; retailers' carloads $1.95, and less than carloads $2.05, with 30 cents for galvanizing. Annealed smooth fence wire is held at $1.60, with the usual differentials to retailers for carloads and less than carloads. Quotations are all f. o. b. Pittsburg, 60 days, with 2 percent discount for cash in ten days. Iron cut nails are held at $1.85 Pittsburg, and steel at $1.75.

Merchant Steel.—Demand for all grades of merchant material continues exceedingly heavy and prices in all lines are firm. The demand for shafting is improving although the buying is limited largely to small lots. We quote: Cold rolled and ground shafting, 52 percent off in carload lots, and 47 off in less than car lots, delivered in base territory; tire steel, 1.60c to 1.65c; open-hearth spring steel, 2c to 2.10c; sleigh shoe, flat, 1.55c to 1.60c; smooth finished machinery steel, 1.60c; toe calk, 1.95 to 2c.

Old Material.—The scrap market is quiet, consumers not being disposed to cover at prevailing prices. Sheet scrap has recently sold as high as $14.65 at the mill, which is a new high point for this material. Heavy melting stock is firm at $17 to $17.50, while low phosphorus stock is strong at $20 to $20.50. We revise quotations, gross tons, as follows: Heavy melting stock, $17 to $17.50; low phosphorus, $20 to $20.50; rerolling rails, $16.50 to $17; sheet scrap, $15 to $15.25; No. 1 wrought, $19.50 to $20; cast iron borings, $11 to $11.50.

Coke.—The Lackawanna Steel Co. is again in the market for coke, the purchase of 1,000 tons daily for the next three years being insufficient to meet requirements. Recently another purchase of coke for the remainder of this year was made at $2.35 and a higher price will be paid for the coke that will be bought this week. Furnace coke for prompt shipment is quoted $2.75 to $3, although for the remainder of the first half $2.50 could be done. Foundry coke is held at $2.75 to $3 for any delivery. For the week ending Jan. 7 the production of the Connellsville region broke all records, the upper region having produced 250,684 tons and the lower region 73,107 tons. In the upper region only 1,724 ovens out of a total of 22,711 are idle, while in the lower region only 399 are idle out of a total of 6,408.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
1164 MONADNOCK BLOCK, Jan. 17.

What impresses the inquirer for iron and steel most strongly when sounding the market for his requirements in the coming months, is the absence of any disposition on the part of sellers to shade prices or make any concessions to get the business offered. The first fortnight of a new year is always an uncertain time in iron and steel trading, but the probationary period this year has passed, leaving the market stronger than it was before. Pig iron, coke, billets, sheet bars, wire rods and all other raw or intermediate products are difficult to obtain, and for quick deliveries, by which is meant shipment in the next two months, premiums are asked and cheerfully paid. A fear

that there may be greater difficulty in getting deliveries of finished materials later in the year appears to exist among some consumers, and the volume of specifications for anticipated requirements grows greater each week. All the mills and furnaces operating in this territory report they are filled up for from four to thirteen weeks, and some mills are thirty days behind in their shipments. The trading in the week under review has not been heavy, orders generally being for small lots and of the "filling in" kind. However, that accurate barometer of the trend of the market—specifications—indicates general activity in consuming lines, and there are many on the selling side of the market who are of the opinion that 1905 is going to break all previous records in the tonnage consumed.

Pig Iron.—Buying has been light and of a listless nature, the transactions closed having resulted in no material change in the situation. There is very little iron offered for first quarter delivery, which may account in part for the dullness. The lots closed up in the week past were for second and third quarter shipments, for which several Southern furnaces have insisted on an advance ranging from 25 cents to 50 cents a ton above present prices. The increased consumption since the first of the year has developed a slight inquiry for iron for spot shipment, and on these orders also higher prices have been asked and paid. Northern furnaces have made no change in their prices and are quoting on the basis of $17.50 Chicago for No. 2 foundry for any delivery desired. The malleable trade is slow in coming forward with its requirements this year, little tonnage having been booked from this source for several weeks. High silicon irons are scarce and in correspondingly good demand. Complaint is made of the difficulty of getting the lower grades, notably gray forge, and prices on these are growing stronger, gray forge being quoted $12.75 Birmingham, or $16.40 Chicago. We have revised our prices, and quote as follows:

Lake Superior Charcoal	$18 50 to 19 00
Northern Foundry No. 1	18 00
Northern Foundry No. 2	17 50
Northern Foundry No. 3	17 00
Northern Scotch Foundry	17 50
Ohio Strong Softeners No. 1	19 30 to 19 80
Ohio Strong Softeners No. 2	18 30 to 18 80
Southern Foundry No. 1	17 65 to 17 90
Southern Foundry No. 2	17 15 to 17 40
Southern Foundry No. 3	16 65 to 16 90
Southern Foundry No. 4	16 40 to 16 65
Southern No. 1 Soft	17 65 to 17 90
Southern No. 2 Soft	17 15 to 17 40
Southern Gray Forge	16 40
Southern Mottled	16 40
Southern Silveries (4% to 6% Silicon)	18 65 to 19 15
Jackson Co. Silveries (6% to 8% Silicon)	20 30 to 22 30
Jackson Co. Silveries (8% to 10% Silicon)	22 30 to 22 80
Alabama and Georgia Car Wheel	21 15
Malleable Bessemer	17 50
Basic Iron	18 15

Billets.—The difficulty of getting any kind of billets in this market becomes more pronounced each week. Orders are invariably scaled down and the buyer must perforce distribute his wants among the different manufacturers. It is difficult to quote accurate prices, every order being a law unto itself, its size, the class of material and delivery required, and past relations between the buyer and seller, all being determining factors in naming the price. As a minimum at which local sellers will market their product, we quote as follows: On carload lots for Chicago delivery—Forging billets, 4 x 4 and larger, up to but not including 10 x 10, up to .25 carbon, $27; up to and including .60 carbon, $1 extra. Rerolling billets, Bessemer or open-hearth, 4 x 4 and larger, $25; billets, 3⅞ in. and smaller, and sheet and tin bars, $27. Wire rods, $32 Pittsburg.

Bars.—New business for iron or steel bars is not of large proportions. The best barometer of the state of the trade, however, is the volume of specifications received by mills, and these are exceptionally heavy. Practically all the large consumers in this territory are under contract, and new business will necessarily be of small proportions for some weeks to come. There is occasionally a good sized order for bar iron from car builders who continue to take on orders for new cars at a gratifying rate, but these are the exception rather than the rule. Prices are without change, except on hard steel angles, which are now held at 1.65c Chicago. We quote carload lots mill shipments, Chicago delivery, as follows: Bar iron, 1.65c; Bessemer and open-hearth bars and bands, 1.56½c base, half extras; soft steel angles, less than 3 x 3, 1.76½c; hard steel angles, 1.60c to 1.65c; hoops, 1.71½c base, full extras. Store quotations are firm, and we quote on lots from warehouse stocks, as follows: Bar iron, 1.90c to 2c base, full extras; soft steel bars and bands, 1.75c to 1.85c base, half extras; soft steel angles, channels and tees, 1.85c to 1.95c; hoops, 2c to 2.10c base, full extras.

Sheets.—The market continues without any noteworthy features, buying being of a desultory nature. Prices are very strong and indications are not lacking that higher values will rule before long. We quote carload lots, mill shipments, Chicago delivery, as follows: Blue annealed sheets, Nos. 9 to 10, 1.81½c to 1.86½c; Nos. 11 and 12, 1.86½c to 1.91½c; Nos. 13 and 14, 1.91½c to 1.96½c; Nos. 15 and 16, 2.01½c to 2.06½c. On box annealed, one pass, cold rolled, we quote Nos. 18 and 20, 2.21½c to 2.26½c; Nos. 22 and 24, 2.26½c to 2.31½c; Nos. 25 and 26, 2.31½c to 2.36½c; No. 27, 2.36½c to 2.41½c; No. 28, 2.46½c to 2.51½c; No. 29, 2.56½c to 2.61½c; No. 30, 2.66½c to 2.71½c. We quote on lots from warehouse stocks as follows: No. 10, 2c to 2.05c; No. 12, 2.05c to 2.10c; No. 14, 2.10c to 2.15c; No. 16, 2.20c to 2.25c; Nos. 18 and 20, 2.40c to 2.45c; Nos. 22 and 24, 2.45c to 2.50c; No. 26, 2.60c to 2.65c; No. 27, 2.70c to 2.75c; No. 28, 2.80c to 2.85c; No. 29, 2.90c to 2.95c. Galvanized sheets, mill shipments, Chicago delivery, are quoted without change as follows: Nos. 12-14, 2.46½c; No. 16, 2.61½c; Nos. 18-21, 2.76½c; Nos. 22-24, 2.91½c; No. 26, 3.11½c; No. 27, 3.31½c; No. 28, 3.51½c. Jobbers' prices on lots from store are as follows: Nos. 10 to 16 inclusive, 3c; Nos. 18 and 20, 3.01c; Nos. 22 and 24, 3.15c to 3.20c; No. 26, 3.38c to 3.40c; No. 27, 3.60c; No. 28, 3.83c; No. 29, 4.20c to 4.25c; No. 30, 4.73c.

Structural Steel.—Two small building contracts have been let in the past week, amounting to about 800 tons. One is for the addition to the Union League Club, and the other for an addition to the Michael Reese Hospital. In specifications, however, the market is very active, the past week having been the heaviest in this respect for some months. We quote prices unchanged on carload lots, mill shipments, Chicago delivery, as follows: Beams and channels, 3 to 15 in. inclusive, 1.66½c; angles, 3 to 6 in., ¼ in. and heavier, 1.66½c; angles, larger than 6 in. on one or both legs, 1.76½c; beams larger than 15 in., 1.76½c; zees, 3 in. and over, 1.66½c; tees, 3 in. and over, 1.76½c, with the usual extras for cutting to exact lengths, punching, coping, bending or other shop work. Store prices have been advanced, and, according to tonnage, are quoted: 1.90c to 2c for angles, beams and channels, base sizes, with 2c to 2.10c for 18, 20 and 24-in. beams; tees and zees, 1.95c to 2.05c. These prices are for either random lengths or cut to specifications.

Plates.—Many consumers, fearing a shortage in the supply of finished material later in the year, are anticipating their requirements and placing in stock in their own yards and warehouses a good sized tonnage of plates. The specifications have been very heavy in the past week and mills look for continued good tonnage. Prices are without change, and we quote carload lots, mill shipments, Chicago delivery, as follows: Tank steel, ¼ in. and heavier, 6¼ in. to 14 in. wide, rectangular plates only,

1.56½c base; over 14 in., to 100 in., 1.66½c base, flange steel, 1.76½c base; marine steel, 1.86½c base, all full extras. Plates, 3-16 in. thick, $2 extra; gauges 7 to 8, $3 extra; No. 9, $5 extra. Less than carload lots, $5 extra. Store prices are very firm. We have revised our quotations as follows: Tank steel, ¼ in. and heavier up to and including 72 in. wide, 1.90c; over 72 in. wide up to 100 in., 1.10c extra; over 100 in. wide, usual mill extras; 3-16 in. up to but not including 72 in. wide, 2c; 3-16 in., 72 in. wide, 2¼c; flange steel, 25c extra; heads, 25c extra.

Rails and Track Supplies.—In the past week contracts for over 70,000 tons of standard sections have been placed with the local mill, including an order for 30,000 tons from the Great Northern, and an equal amount from the Northern Pacific. The aggregate tonnage closed in this district since the first of the year is now about 400,000 tons. Light rails and track supplies are both in excellent demand, the entire output of Western mills manufacturing these products going into immediate consumption. We quote heavy sections in 500-ton lots and over, f. o. b. mill, $28; less than 500 tons to carload lots, $30; less than carload lots, $32. Light rails are as follows: 12-lb. sections, $27; 16 lb., $26; 20 and 25 lb., $25; 30, 35, 40 and 45 lb. sections, $24, all f. o. b. Milwaukee mill. Track supplies, f. o. b. Joliet mill: Angle bars, 1.30c to 1.35c; spikes, first quality, 1.70c to 1.75c; track bolts, 3¼ x ¾, with square nuts, 2.30c to 2.40c per 100 lb. with hexagon nuts, 2.45c to 2.55c.

Merchant Steel.—New business continues quiet, which is due largely to the action of producers in declining to take on additional tonnage. Specifications, however, are active and sufficient to take care of the output of mills. Prices are without change, and we quote carload lots, mill shipments, Chicago delivery, as follows: Spring steel, 2c; sleigh shoe, flat sizes, 1.61½c; concave and convex, 1.76½c; cutter shoe, 2.25c; smooth finished machinery steel, 1.81½c; smooth finished tire, 1.76½c; plow steel, 2.20c and upwards, according to quality; toe calk steel, 2.11½c. Crucible tool steel, 6½c to 8c; special grades of tool steel, 13c and upwards. Cold rolled shafting is quoted at 52 percent from list on carload lots, and 47 percent discount on less than carload lots.

Merchant Pipe.—About all that can be said of the local trade is that specifications are good. Prices are without change, and we quote carload lots, mill shipments, random lengths, f. o. b. Chicago, as follows:

MERCHANT PIPE.

	Steel Pipe.		Guaranteed Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ and ¼ inches	66.85	50.85	64.85	48.85
⅜ and ½ inches	70.85	58.85	68.85	56.85
¾ to 6 inches	74.85	64.85	73.35	63.35
7 to 12 inches	69.85	54.85	68.35	52.85
	Extra Strong Plain Ends.			
⅛ to ¾ inches	59.85	47.85	57.85	45.85
⅜ to 4 inches	66.85	54.85	64.85	52.85
4½ to 8 inches	62.85	50.85	60.85	48.85
XX Strong Plain Ends	55.85	44.85	53.85	42.85

Boiler Tubes.—Both new business and specifications are brisk. Prices are firm and without change. We quote mill shipments, carload lots, Chicago delivery, as follows:

BOILER TUBES.

	L. W. Steel Percent.	C. C. Iron. Percent.	Seamless Steel. Percent.
1 to 1½ inch	44.35	41.35	52.35
1¾ to 2¼ inch	56.35	41.35	40.35
2½ inch	58.35	46.35	43.35
2¾ inch to 5 inch	64.35	59.35	Up to 4 inches 50.85
6 to 13 inch	56.35	41.35	

The following are the agreed discounts from store:

	Steel.	Iron.	Seamless Steel.
1 to 1½ inches, inclusive	40½	27½	40
1¾ to 2¼ inches, inclusive	50½	35	37½
2½ inches, inclusive	53	27½	40
2¾ to 5 inches, inclusive	60½	47½	47½
6 inches and larger	50½	35	

Cast Iron Pipe.—Several large deals are pending which are expected to be closed in the next few weeks. These include 3,000 tons for Los Angeles, Cal., 1,000 tons for St. Paul, Minn., 1,500 tons for Deadwood, S. D., and several smaller lots. Prices are without change, and we quote carload lots, Chicago delivery, as follows: 4-in. water pipe, $28.50; 6-in. and larger, $27.50; gas pipe, $1 a ton higher.

Wire Products.—All branches of the trade are specifying freely on old contracts. New business also is of active proportions, though producers are declining to sell further ahead than sixty days. Prices are firm and without change. We quote carload lots, mill shipments, Chicago delivery, as follows: Wire nails, $1.90; painted barb wire, $2.05; galvanized barb wire, $2.35; smooth annealed wire, $1.75; smooth galvanized wire, $2.05; polished staples, $2; galvanized staples, $2.30. Less than carload lots to jobbers are 5 cents higher than above prices. The retail trade is quoted 5 cents extra over the foregoing on carload lots, and 10 cents extra on less than carload lots. Bale ties are unchanged at 82½ and 5 percent to 85 percent discount f. o. b. Waukegan, Ill., on straight carload lots. Poultry netting, 85 and 5 percent discount from list f. o. b. Joliet and DeKalb, with actual freight allowed not exceeding 30 cents per 100 lb.

Foundry Coke.—Demand for coke has improved in the past ten days and all the fuel on track has been disposed of. Prices are traveling higher, and it is doubtful if any good Connellsville 72-hour coke can be bought at less than $3 at the ovens or $5.65 Chicago. Some interests are asking higher prices than these, but are booking little tonnages.

Old Material.—The Chicago & Rock Island has a list out offering 1,500 tons for sale which is the only railroad tonnage of importance being offered to the trade. Consumptive demand is quiet and prices are probably weaker than they were at the writing of our last report. We quote dealers' selling prices, gross tons, as follows:

Old steel rails (4 feet and over)	$16 00 to 16 50
Old steel rails (less than 4 feet)	15 00 to 15 50
Old iron rails	21 00 to 22 00
Relaying rails, subject to inspection	22 00 to 22 50
Relaying rails, without inspection	20 00 to 20 50
Old wheels	16 50 to 17 00
Heavy melting steel	15 00 to 15 50
Mixed country steel	8 75 to 10 25
Low phosphorus scrap (.05 and under)	14 00 to 14 50

The following quotations are for net tons:

No. 1 R. R. wrought	17 50 to 18 00
No. 2 R. R. wrought	16 50 to 17 00
Shafting	17 50 to 18 00
Dealers' Forge, No. 1	14 50 to 15 00
Wrought pipe and flues	13 00 to 13 50
No. 1 cast, 150 lb. and less	14 00 to 14 50
No. 1 mill	11 00 to 11 50
No. 1 Busheling	12 50 to 13 00
No. 2 Busheling	11 00 to 11 50
Country sheet	8 00 to 8 50
No. 1 boilers, cut	12 00 to 13 00
Boiler punchings	14 50 to 15 00
Iron car axles	21 50 to 22 50
Steel car axles	17 00 to 17 50
Iron axle turnings	12 00 to 12 50
Steel axle turnings	12 00 to 12 50
Cast borings	9 00 to 9 50
Mixed borings, etc	9 00 to 9 50
Machine shop turnings	11 50 to 12 00
Railroad malleable	13 50 to 14 00
Agricultural malleable	13 00 to 13 50
Stove plate and light cast scrap	12 00 to 12 50
Old iron splice bars	18 50 to 19 00

CLEVELAND.

OFFICE OF *The Iron Trade Review*, BROWNING BUILDING, Jan. 18.

Iron Ore.—The market has been very active for a few days and heavy sales have been made. Owing to the large number of long term contracts, the tonnage to be disposed of is not nearly so large as it was two or three years ago. It is estimated that from 2,000,000 to 3,000,000 tons have been sold within a few days. The prices recently announced are not complained of by buyers and are being adhered to. They are as follows: Old range

Bessemer, $3.75; Mesabi Bessemer, $3.50; old range non-Bessemer, $3.20; Mesabi non-Bessemer, $3.

At the annual meeting of the Lake Carriers' Association in Detroit the latter part of last week, there was considerable discussion of labor matters and strong sentiment in favor of the "open shop" developed, but the entire subject was left in the hands of the executive committee and it seems probable that there will not be a radical departure from the policy or schedules of wages of last year. Deckhands have decided to ask for an increase of 10 percent in wages.

Pig Iron.—The market has not been nearly so strong for a few days. The purchase of 25,000 tons of Bessemer by the steel corporation at $15.50 was the first indication that recent quotations could be shaded from 50 to 75 cents. It was said that this iron was collected by the firm receiving the order from speculators and that it did not establish the price at $15.50, but that, on the contrary, the getting of the speculative iron out of the way would add strength to the market. While there was some force in this argument, Bessemer is not so strong and sales of foundry have been made as low as $15.50 for No. 2, which is $1 below last week's quotation. Some interests which are pretty well sold up for the first and second half are still quoting from $16.35 to $16.50 for No. 2, but furnaces having any considerable amount of iron unsold for the first half are glad to take $16 and some have missed sales at lower quotations than that. This present weakness is not viewed with alarm, but is rather considered as a fortunate turn which will check the tendency of prices to go too high. There seems to be no prospect of settling the miners' strike in the South for several months and Southern furnaces are holding to their quotations of $13.50 to $14 for No. 2 Birmingham. Southern salesmen are finding it extremely difficult to make sales at those prices. We quote as follows, Cleveland delivery:

Bessemer	$ 16 85
No. 1 Foundry	17 00 to 17 50
No. 2 Foundry	16 50 to 16 85
No. 3 Foundry	15 75 to 16 00
No. 2 Southern	17 35 to 17 85
Gray Forge	15 50 to 16 00
Gray Forge, Southern	16 00 to 16 60
Lake Superior charcoal	18 00 to 18 50

Coke.—There is less difficulty in making deliveries and prices are easier. While in some cases higher quotations are made for prompt shipment, the usual quotations for the first half are $2.60 to $2.75 for furnace and $3 for foundry coke.

Finished Material.—Both manufacturers and jobbers make most favorable reports. Mills are very busy and deliveries are delayed from a month to three months. Owing to the inability of buyers to get orders filled promptly by mills, jobbers are doing a large business out of store. Bar iron mills alone complain of few orders, with the price of their product 1.65c to 1.75c at the plants. Steel bars are firm at 1.49½c Cleveland. Recent advances in sheets have not checked buying and the business, especially on galvanized, is better than it has been for a long time. Sheet mills are so busy that they are slow in delivering. The prices of the principal producers through jobbers are as follows, Cleveland delivery, the freight from Pittsburg being 9¼ cents: Mill sales of black sheets in carload lots, No. 10, 1.79½c; Nos. 11-12, 1.84½c; No. 14, 1.89½c; No. 16, 1.99½c; No. 27, 2.39¼c; No. 28, 2.40¼c. Galvanized, mill sales, No. 14, 2.54¼c; No. 16, 2.64½c; Nos. 18-20, 2.84¼c; Nos. 22-24, 2.94½c; No. 25, 3.14½c; No. 27, 3.34½c; No. 28, 3.54¼c. Out of stock, black sheets, ¼ in., 1.80c; 3-16 in., 1.90c. Blue annealed, No. 10, 2.05c; No. 12, 2.10c; No. 14, 2.15c; No. 16, 2.25c. One pass cold rolled: Nos. 18-20, 2.45c; Nos. 22-24, 2.50c; No. 26, 2.55c; No. 27, 2.60c; No. 28, 2.70c; No. 30, 3.10c. Galvanized out of stock, No. 16, 2.85c; Nos. 18-20, 2.95c; Nos. 22-24, 3.40c; No. 26, 3.30c; No. 27, 3.50c; No. 28, 3.70c; No. 30, 4.50c.

Old Material.—Prices are firm and stationary, but business is rather quiet. We quote as follows, gross tons, Cleveland:

Old iron rails	$24 00 to 25 00
Old steel rails (over 6 feet)	16 50 to 17 00
Old steel rails (under 6 feet)	17 00 to 17 50
Old car wheels	17 50 to 18 00
Steel boiler plate	13 00 to 13 50
Steel axles	18 00 to 19 00
Malleable iron (railroad)	15 50 to 16 00
Malleable iron (agricultural)	14 50 to 15 00
Heavy steel	16 50 to 17 00

We quote as follows, net tons:

No. 1 R. R. wrought	17 00 to 17 50
No. 1 busheling	14 50 to 15 00
No. 1 machine cast	14 50 to 15 00
Iron axles	21 00 to 22 00
Axle turnings	13 00 to 13 50
Wrought turnings (free from cast)	12 00 to 12 50
Grate bars	10 00 to 10 50
Pipes and flues	13 00 to 14 00
Tank iron	11 00 to 12 00
Hoop and band iron	9 00 to 10 00
Sheet iron	7 00 to 8 00
Wrought drillings	12 00 to 12 50
Stove plate	11 00 to 11 50
Cast borings	8 50 to 9 00

CINCINNATI.

Jan. 17.

The situation regarding spot coke is unchanged and sales of foundry coke for prompt shipment are at $3 per ton and of furnace coke at $2.50 per ton f. o. b. Connellsville as minimum prices. In some instances as much as 25c above these quotations is paid.

Pig Iron.—Rather more sales of iron for second quarter delivery are being made. The aggregate tonnage is slightly larger than in the preceding week. Two lots of 500 tons of Southern foundry iron are reported to have been sold in Cleveland, one at $13.50 and one at $13.75 Birmingham, while 300 tons sold for delivery in Evansville at $13.50. A Virginia pipe company bought 2,000 tons. A railroad company purchased 1,100 tons for delivery in Louisville at $13.75 Birmingham. A sale of 500 tons of Ohio 8 percent silvery is reported at $20 furnace. The above are all for delivery in the second quarter. A large consumer bought about 3,000 tons for early shipment. The rank and file of consumers of foundry iron are buying conservatively and seem disposed to await developments as they have covered their first quarter requirements generally. There is no pressure on the part of furnace interests to sell iron but it is becoming increasingly evident that Southern iron at $13.50 Birmingham is available and can be purchased without difficulty. Sales at $13.75 are mostly small lots of some favorite brand with the melter for which he is willing to pay a premium, or the deliveries are at points where there is no competition with Northern irons. During December furnace shipments were liberal and this has tended to keep consumers well supplied, obviating the necessity of forcing them to come into the market for quick shipment iron through inability to get supplies on their contracts. This feature in the situation has also tended to make the consumer less apprehensive in regard to securing iron and has put him in the attitude of complacency in regard to his future requirements. On the other hand the furnaces have booked so much business that the present season of comparative inactivity does not disturb the feeling of strength which they have had since the advance in prices. We quote prices f. o. b. Cincinnati as follows:

Southern Foundry No. 1	$16 75 to 17 00
Southern Foundry No. 2	16 25 to 16 50
Southern Foundry No. 3	15 75 to 16 00
Southern Foundry No. 4	15 50 to 15 75
Southern Foundry No. 1, soft	16 75 to 17 00
Southern Foundry No. 2, soft	16 25 to 16 50
Gray Forge	15 25 to 15 50
Northern Foundry No. 1	17 65 to 18 15
Northern Foundry No. 2	17 15 to 17 65
Northern Foundry No. 3	16 65 to 17 15
Southern Charcoal	19 50 to 19 75

Finished Material.—The demand in a jobbing way is good and the market is firm for all descriptions. Retail prices have not advanced in full proportion with the advances in mill quotations but still there is still some of the old priced stock on hand and the way it is being taken is quite satisfactory to the trade. Bar iron is up another 5c on the week but other quotations are unchanged. Bar iron is now quoted at 1.75c; steel bars at 1.53c, half extras, with dealers quoting 1.85c for iron and steel out of store. Galvanized sheets at 75 and 10 and 5 percent off. We quote black sheets, No. 27, at 2.40c in car lots of 500 bundles. Black sheets out of store are selling as follows: No. 28, 2.70c; No. 27, 2.60c; No. 16, 2.20c; No. 14, 2.10c; No. 12, 2.05c; No. 10, 2c. Tank plates are firm and sell out of stores at 1.90c for ¼-in. and 1.95c for 3-16 No. 8 and No. 10. Beams and channels are quoted at 1.90c to 2c from stock, and angles at 1.95c to 2c for base sizes.

In merchant pipe there is a noticeable increase in consumption and trade is quite active. There is not just now enough carload business to test the competition of the independent mills, but so far as can be learned there is a tendency to maintain prices all along the line. We quote carload lots f. o. b. Cincinnati as follows:

MERCHANT PIPE.

(Basing Discounts.)

	Steel Pipe.		Guaranteed Wrought Iron Pipe.	
	Black. Percent.	Galv. Percent.	Black. Percent.	Galv. Percent.
⅛ and ¼ inches	66.85	50.85	64.85	48.85
⅜ and ½ inches	70.85	58.85	68.85	56.85
¾ to 6 inches	74.85	64.85	78.35	63.35
7 to 12 inches	69.85	54.85	68.35	52.85

Old Material.—The market continues strong but quiet, as prices asked are too high to attract business. Car wheels and axles are leading in interest just now and are held at full figures. We quote:

Old No. 1 railroad wrought, net tons	$15 00 to 15 50
Cast machine and foundry, net tons	13 50 to 14 00
Old iron rails, gross tons	19 00 to 20 00
Old steel rails, gross tons	14 00 to 15 00
Old short lengths, gross tons	14 50 to 15 00
Old iron axles, net tons	19 00 to 20 00
Stove plate, net tons	9 50 to 10 00
Wrought turnings, net tons	10 00 to 10 50
Cast borings, net tons	9 00 to 9 50

PHILADELPHIA.

Jan. 17.

Conditions continue favorable, but business is moving along quietly. Railroads have not placed as heavy orders for rails as expected, but it is confidently believed that the sales will be larger than in 1904. December holds the record in pig iron. In June, 1903, the production of pig iron was 10,000 tons larger, but in that month stocks increased 52,000 tons, while in December, 1904, stocks decreased 121,000 tons.

Pig Iron.—The market is strong on foundry and steel making irons, but easier on mill irons. A very heavy tonnage has been purchased and buying is not now as brisk. We quote as follows for Philadelphia delivery: No. 1 X foundry, $17.75 to $18.25; No. 2 X foundry, $17.50 to $17.75; No. 2 plain, $16.75 to $17; standard gray forge, $16 to $16.25; basic, $16.50 to $16.75; low phosphorus, $20 to $20.25.

Finished Material.—The mills are busy and the demand for all kinds of material is strong. The plate market shows improvement. Specifications are coming in freely. We quote as follows: Beams and channels up to 15 inches, 1.63½c; over 15 inches, 1.73½c; small angles, 1.63½c; large angles, 1.73½c; steel bars, 1.63½c; refined iron, 1.65c to 1.70c; plates, 1.63½c.

Old Material.—Prices are strongly maintained, bids at lower than market prices being quickly refused. We quote: No. 1 steel scrap, $17.50 to $18; low phosphorus scrap, $21 to $22; old steel axles, $20 to $20.50; old iron axles, $23 to $24; old iron rails, $22.50 to $23; old car wheels, $16 to $16.50; choice R. R. No. 1 wrought, $20.50 to $21; machinery scrap, $16 to $16.50; wrought turnings, $14.50 to $15; cast borings, $11 to $11.50; stove plate, $14 to $14.50; wrought iron pipe, $16 to $16.50.

NEW YORK.

OFFICE OF *The Iron Trade Review*,
ROOM 1315, No. 150 NASSAU ST., Jan. 17.

Pig Iron.—The early part of the past week found trade rather limited, but in the past few days some good contracts were closed. The chief one was for 2,100 tons of Eastern Pennsylvania and Virginia foundry grades, the purchaser being a Connecticut gas fixture manufacturing company. The deliveries run up to April. The same company has an inquiry out for 1,000 tons of high silicon foundry iron. Another large contract taken was for 1,000 tons of Eastern Pennsylvania foundry iron, delivery within three months. The remaining sales of the week were in lots of from 100 to 500 tons, constituting a fairly good tonnage, with foundry grades making up an unusually large portion. Prices are firm, with an upward tendency. While Northern No. 2 foundry has been selling at $16.75 at the furnace for weeks past, there are some interests which are quoting $17, although the former figure is the basis of actual sales. In Southern brands, No. 2 foundry is quoted at from $13.50 to $14. One leading company is selling iron at the inside figure, though not for considerable amounts. Another company is quoting $13.75, and reports sales at this price. There are a few companies quoting $14, but sales have yet to be made by them. The demand for early shipment has been very keen recently, with New England interests most insistent in this respect. Buying nowadays rarely extends beyond three months' delivery, for which round lots can be contracted for, despite reports to the contrary. In the iron warrant market, today's closings on last call were as follows:

Cash.	Bid.	Asked.
January	$16.85	$16.95
February	16.85	16.90
March	.....	17.00
April	16.90	17.10
May	16.90	17.00
June	16.80	17.00
July	.....	17.00
August	.....	17.00

Finished Iron and Steel.—Although a fortnight of the new year has passed, business in structural shapes has been very quiet. Practically no contracts of any magnitude have been placed, and the aggregate tonnage of orders for small lots makes a poor showing. February is always a good month for manufacturers, who look for meager trade in the meantime, although there is a possibility that two railroads will shortly issue specifications for bridge work calling for from 10,000 to 20,000 tons. The labor situation in this city is still a menacing feature, although what a manufacturer calls an armed truce exists at present. Orders for steel bars have been good recently, while for bar iron demand has been only fair. The plate trade has been without interest, while sheets are moderately active. New York prices at tidewater follow: Angles, 3 to 6 in. x ¼ in. and heavier, 1.64½c; beams, 3 to 15 in., 1.64½c; channels, 3 to 15 in., 1.64½c; beams, 18, 20 and 24 in., 1.74½c; tees, 3 x ¼ in. and heavier, 1.69¼c; plates, carloads, tank, 1.64½c; flange, 1.74½c; marine and ordinary fire box, 1.84½c; refined iron bars, 1.64½c; soft steel bars, 1.54½c to 1.60c; sheets, in carload lots, New York, No. 28, black, 2.50c to 2.55c; galvanized, 3.55c to 3.60c.

Old Material.—Sales during the past week were more numerous than for the week previous, with prices in some instances a little higher than those previously quoted. Wrought

material of all kinds has led in activity, with heavy steel scrap and cast material following in the order named. Stocks have suffered a notable depletion recently. and this is taken to mean that higher prices are imminent. Approximate prices f. o. b. cars are as follows:

Old iron rails	$20 00 to 22 00
Old steel rails, long lengths	16 00 to 17 00
Old steel rails, short pieces	15 50 to 16 50
Relaying rails	21 00 to 22 00
Old car wheels	16 00 to 16 50
Old iron car axles	21 00 to 21 50
Old steel car axles	17 00 to 18 00
Heavy melting steel scrap	16 00 to 17 00
No. 1 railroad wrought scrap	19 00 to 21 00
Iron track scrap	17 00 to 18 50
Wrought pipe	13 00 to 14 00
Ordinary light iron	12 00 to 13 00
Cast borings	10 00 to 10 50
Wrought turnings	12 50 to 13 50
No. 1 machinery cast	15 00 to 16 00
Stove plate	12 50 to 13 00

BIRMINGHAM.

BIRMINGHAM, Ala., Jan. 17.—Pig iron production in Alabama is improving. The Tennessee Coal, Iron & Railroad Co. last week blew in one furnace and this week a second furnace at Bessemer was put in operation. The Sloss-Sheffield Steel & Iron Co. will blow in its city furnace which was recently repaired. The Tennessee company has two furnaces at Bessemer ready for the torch and it is proposed to start these up in the next few days. Coal and coke production is increasing as new men are being brought into the district in place of the striking union miners. The leaders of the union miners declare their intention of prolonging the strike indefinitely, while the operators or furnace companies state that they have the strike whipped out and are now beginning to feel the effects of an increased production of coal and coke.

The statement is reiterated that Alabama furnace companies are behind in their deliveries of iron, some companies as much as sixty days. There is a good inquiry for the product notwithstanding the holiday season is just over. Sales are not as lively as they might be.

It is stated that the Dimmick Pipe & Foundry Co. will enlarge its plant at North Birmingham by adding a pit to the three already in operation. The new pit will have a capacity of 150 tons per day. There is such a strong demand for cast iron pipe and prospects are so bright that every effort will be made by this company to make the enlargements at the earliest possible moment.

H. A. McCord, general manager of the Western Car & Foundry Co., which recently acquired the Anniston plant which was operated under lease by the Southern Car & Foundry Co., was in Birmingham the latter part of last week, inquiring for supplies to be used in the plant which will be started up about Feb. 1. Labor will be collected in the next week or so for the works in Anniston and it is understood that the company has a number of orders on hand for cars.

J. McLean and son have purchased the old Eureka Foundry and Machine shops in Birmingham and will transform them into a stove works. The Messrs. McLean were interested in the Avondale Stove & Foundry Co. plant.

There has been no change in pig iron quotations in the past week. No. 2 foundry is still quoted at from $13.75 to $14; No. 1, at $14 to $14.25. There is not a great amount of iron on the yards in this district.

The Metal Market.

CHICAGO

OFFICE OF *The Iron Trade Review,*
1164 MONADNOCK BLOCK, Jan. 17.

Demand for metals in the past week has slackened off perceptibly. With the exception of pig tin, however, prices are without change. This product has regained the ¼c lost last week. We quote as follows: Lake copper in carloads, 15½c; in less than carload lots, 15¾c to 16c. Casting copper, 15¼c for carloads, and 15½c for smaller lots. Pig tin, carloads, 29¾c, less than carload lots 30½c. Spelter is 6c to 6½c for carload lots, and 6¾c to 7c for smaller lots. Sheet zinc, 6.75c for carload lots of 600-lb. casks, and 7¼c to 7½c for less than carload lots. Pig lead, 4.60c for 50-ton lots; 4.75c for carload lots, and 4.90c to 4.95c for smaller quantities. Antimony is 9½c for Cookson's and 9c for Hallett's in small quantities. Nickel is 45c to 60c, according to amount and deliveries.

In old metals, the grade is quiet. Dealers' prices are approximately as follows: Copper wire, 13.50c; copper, heavy, 13.37½c; light copper, 12.37½c; red brass, 11.37½c; red brass borings, 9.75c; yellow brass, 8.75c; yellow brass borings, 7.50c. Lead, 4.40c; tea lead, 4c. Zinc, 4.12½c.

NEW YORK.

OFFICE OF *The Iron Trade Review,*
ROOM 1315, No. 150 NASSAU ST., Jan. 17.

Pig Tin.—The feature of the week has been the strong position of spot, which has commanded high premiums, due to belated shipments, and light offerings. On the other hand futures are very weak, reflecting the tenor of recent advices, which have been very bearish. In London the metal for the past week has been quiet, with a downward tendency in prices. Today's closings follow: Spot, 29.25 to 29.62½c; January, 29.00 to 29.25c; February, 28.50 to 28.85c; March, 28.25 to 28.75c; April, 28.25 to 28.65c. London's closings today follow: Spot, £130 5s; futures, £130 7s 6d. Arrivals at Atlantic ports for the month to date aggregate 1,045 tons, against 4,211 tons afloat.

Copper.—Although the prices of the leading producers show no change as compared with the week previous, concessions are being made in the open market, especially on sales for extended delivery. Buying for nearby requirements is of the moderate order, with that for export fair. In London there has been an active market during the past week, with prices showing increased strength. Today's closings follow: Lake, 15¼ to 15⅜c; electrolytic, 15⅜ to 15¼c; casting, 14⅞ to 15c. London's closings follow: Spot, £68 17s 6d; futures, £69 2s 6d. Exports for the month to date amount to 8,326 tons.

Lead.—Is unchanged and quiet at 4.60c to 40.70c. St. Louis remains at 4.52½c to 4.62½c, according to brand. London still sells at £12 18s 9d.

Spelter.—There has been a further advance in spot, which is now selling at 6.25 to 6.35c. St. Louis advanced to 6.15c, while London declined to £24 17s 6d.

Antimony.—Cookson's declined to 8.75 to 9.00c. Hallett's is firm at 9.00 to 9.12½. Other grades practically unchanged at 7.50 to 8.25c.

Quicksilver.—We quote $40 per flask of 75 lb. in lots of 100 flasks. London is £7 12s 6d.

Nickel.—Sales are made at 40c to 47c for large lots down to a ton, and at 50c to 60c for small quantities.

Mesta Machine Co.'s New Foundry.

(Special Telegram.)

PITTSBURG, Pa., Jan. 18.—The Mesta Machine Co. has completed plans for the erection of a new foundry whose melting capacity will be double that of the present plant. When the new foundry is completed, the old foundry will be used as an extension to the machine shop. The new foundry will be 1,200 x 210 ft. and will connect with the old shop. The building will be of buff brick and steel and the architecture the same as present buildings. The present foundry contains six air furnaces and these will be increased to twelve in the new foundry. The two steel furnaces will be increased to four and four additional cupolas will be added to the present equipment. A brass foundry is now under construction as well as a power plant, which will be equipped with two Westinghouse generators, two 700-h. p. engines and eight boilers of 250 h. p. each.

RETIREMENT OF HENRY S. MANNING.

Henry S. Manning, of the firm of Manning, Maxwell & Moore, has sold his interest in the firm and in all of its allied manufacturing companies to Charles A. Moore, who is now the sole proprietor of the business. The firm name of Manning, Maxwell & Moore will be retained by Mr. Moore. Mr. Manning, on Jan 7, made known to his partner his intention to retire from active business and extended to him the first opportunity to buy his holdings. The two men soon agreed upon terms, which were on a cash basis. Probably no firm is better or more widely known in the development of the merchant side of the machinery trade of the United States than that of Manning, Maxwell & Moore. While it has sought no repute as a manufacturer and is chiefly known in the machinery world as a seller, it has a controlling interest in a number of manufacturing concerns. The firm is the outgrowth of the engineering and manufacturers' supply house of H. S. Manning & Co., 111 Liberty street, New York, which dates back to 1873. The original firm line was limited to taps, bolt cutters and the like. In 1881 the firm name was changed to Manning, Maxwell & Moore, the partners being H. S.

HENRY S. MANNING.

Manning, Eugene L. Maxwell and Chas. A. Moore. Mr. Maxwell's death in 1895 left the business in the hands of Messrs. Manning and Moore. In addition to the offices and store rooms at 85-89 Liberty street, New York, the firm has a store in Boston, a store in Chicago, an office and warehouse in Pittsburg, and offices in Philadelphia and Cleveland. It has agencies in England, Berlin, Paris and St. Petersburg. It controls a number of companies manufacturing specialties as follows: The Shaw Electric Crane Co., of Muskegon, Mich., manufacturer of electric traveling cranes; the Pedrick & Ayer Co., of Philadelphia, manufacturing air hoists, cranes, air compressors, compressed air riveters and other pneumatic tools; the Ashcroft Mfg. Co., steam gauges, recording gauges and other engineers' appliances; the Consolidated Safety Valve Co., manufacturer of safety valves; the Hancock Inspirator Co., of Boston, manufacturer of the Hancock inspirator; and the Hayden & Derby Mfg. Co., manufacturer of the Metropolitan injector. Manning, Maxwell & Moore had control also for some years of the Pond Machine Tool Co., of Plainfield, N. J., but this was sold to the Niles Tool Works Co. interests in 1898, and became part of the Niles-Bement-Pond Co. Mr. Moore will take his son Arthur into the business and will probably incorporate a company at a later date, taking in some of his older employes as stockholders.

New Railway Equipment.

The statistics of car and locomotive building in 1904, as compiled by the *Railroad Gazette* and published by *The Iron Trade Review* Dec. 29, indicated that 62,950 cars and coaches, and 3,441 locomotives were built. The statistics of cars and locomotives ordered in 1904, as compiled by the *Railway Age*, show that 138,774 cars and 2,538 locomotives were ordered. Owing to business conditions which prevailed early in the year, by far the greater portion of the orders were placed in the last three months. The total amount of equipment ordered was more than in 1903, but less than in either 1901 or 1902. Most of the equipment ordered in 1904 has not been built.

The government of the Argentine Republic has ordered 12 locomotives from the Baldwin Locomotive Works. The Pittsburg & Lake Erie has ordered five locomotives from the American Locomotive Co. and the New York, New Haven & Hartford has ordered 20 switching locomotives from the same company. The New Mexico Railway & Coal Co. has ordered 18 freight locomotives and two passenger locomotives from the Baldwin Locomotive Works. The Delaware & Hudson has ordered 15 locomotives from the Schenectady Works of the American Locomotive Co. for January, 1905, delivery, and the Cincinnati, Hamilton & Dayton and Pere Marquette has ordered 32 locomotives from the Brooks Works of the American Locomotive Co. and 30 locomotives from the Baldwin Locomotive Works, all for February, March and April, 1905, delivery.

The Chicago & Northwestern has ordered 1,000 box cars from the Pullman Co. The United Coal Co. has ordered 1,000 cars from the Standard Steel Car Co. The Halifax & Southwestern has ordered 100 box cars and 50 flat cars from Rhodes, Curry & Co. The Northern Pacific has ordered 2,500 box cars from the Western Steel Car & Foundry Co. The Queen & Crescent has placed orders as follows: Barney & Smith, 400 box cars; Mt. Vernon Car Mfg. Co., 200 box and 200 gondolas; Western Steel Car & Foundry Co., 200 coke cars; Detroit Works of the American Car & Foundry Co., 100 steel ore cars, and the St. Louis Works of the American Car & Foundry Co., 400 box cars. The Cincinnati, Hamilton & Dayton and Pere Marquette has ordered 3,000 box cars and 2,000 wooden gondolas from the American Car & Foundry Co.

The Board of United States General Appraisers, in deciding a protest filed by R. Hoe & Co., New York, has declared that molders' patterns must pay duty of 35 percent ad valorem. The patterns in question were brought to this country by R. Hoe & Co. and were classified by the appraiser as "manufactures of wood" and 35 percent duty was assigned. It was maintained by Hoe & Co. that the patterns were entitled to free entry under the provision in the Dingley tariff law for "models of invention and of other improvements in the arts, including patterns for machinery."

At the annual meeting of the stockholders of the Union Steam Pump Co., Battle Creek, Mich., held Jan. 4, the present board of directors was re-elected as follows: D. L. Merrill, Edward B. Keet, Chas. T. Allen, I. N. Moore, L. B. Anderson, John Heyser and H. A. Latta. Ten percent dividend was declared and very favorable reports of the business of the company were received.

George W. Funk, receiver of the Miskimen Furnace Co., Logansport, Ind., reports the assets to be $18,454 and the liabilities $27,419.

Canal and Lock of the Buffalo & Susquehanna Iron Co.

The completion of the great breakwater in Lake Erie at Buffalo, N. Y., has rendered it possible to use the lands along the lake front for four miles south of the Buffalo river harbor entrance as far as Stony Point for commercial and manufacturing purposes. This breakwater, designed by and built under the direction of Col. T. W. Symons, of the U. S. Corps of Engineers, was begun in 1896 and completed in 1903.

At the extreme southern end of the outer harbor enclosed on the lake side by this breakwater is situated the immense new plant of the Lackawanna Steel Co., on the construction and development of which about $40,000,000 has been and is being expended. Adjoining the Lackawanna steel plant property on the north is the property owned by the Buffalo & Susquehanna Iron Co. and the Buffalo & Susquehanna Railway Co., which property with a general average width of about 800 ft. extends inland from the lake nearly one mile.

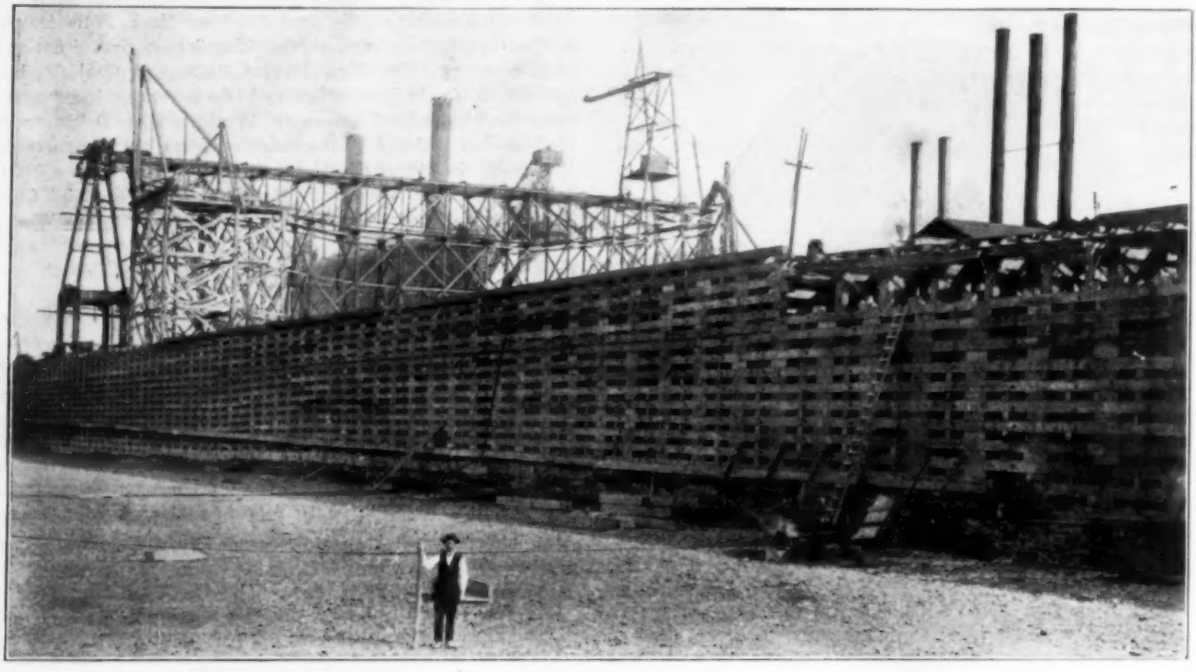

FIG. 1.—FRONT VIEW OF DOCK, SHOWING ALSO FURNACES AND BROWN HOIST. CRIB WORK 31 FT. HIGH.

To the north of this property is a large tract belonging to the Pennsylvania Railroad, and upon which this company designs to erect its immense Buffalo freight terminals.

With great wisdom these three companies, Buffalo & Susquehanna Iron Co., Buffalo & Susquehanna Railway and Pennsylvania Railroad, have joined in the enterprise of building a ship canal leading in from the lake for their mutual use and the commercial development of their properties. The canal starts at the established harbor line in the outer harbor and has a total length of 4,000 ft. It is to be 200 ft. wide with its center line on the boundary between the Buffalo & Susquehanna and Pennsylvania railroad properties. When completed its depth will be 23 ft. at mean lake level, which is calculated to be sufficient to float the largest loaded lake vessels under all conditions of wind and weather.

The outer half of the Buffalo & Susquehanna tract and canal is to be used for the freight terminals of the Buffalo & Susquehanna railway for docks, coal pockets, lumber yards, elevators, warehouses, etc. The extreme outer portion or the area between the old lake shore and the harbor line has been enclosed by a substantial dock partially of pile work and partially of crib work and will be filled to a grade of 8 ft. above mean lake levels.

Upon the inner half of the tract are situated the furnaces of the Buffalo & Susquehanna Iron Co. and the canal in front thereof to which this article particularly refers. The land of the Buffalo & Susquehanna Iron Co. is of marshy character with its surface but about two feet above mean lake level. The top soil is a peaty marsh deposit averaging some four or five feet thick. Below these deposits the material is clay to the underlying rock which has an elevation varying from 20 to 30 ft. below mean lake level. The rock is Niagara shale.

The furnaces are built parallel with the canal and about 300 ft. therefrom. Between the canal and the furnaces is the ore yard to be covered and commanded by Brown hoists, electric man trollies, with 5-ton grab buckets similar to those on the Carnegie dock at Conneaut. The canal is cut through the material above briefly described. Along the property of the iron company the rock, by a rather remarkable and fortunate coincidence, lies at an average depth almost exactly corresponding with the projected bottom of the canal. At the western end of the property there is a rock cut of about four feet which at the eastern end the rock dips below canal bottom about four to five feet.

To outline and limit the canal, retain the soft material and furnish a wharf for shipping to lie at unloading ore., etc., and for ordinary commercial purposes a crib dock is being built and is nearly completed along the entire canal front of the iron company.

This crib dock is 20 ft. wide and is founded directly on the bed rock where this is at or above a level of two feet below canal bottom. Where the depth of rock is greater it is cleaned of all soft material and a bed of concrete put in somewhat wider than the crib and to an elevation of 2 ft. below canal bottom. To overcome the tendency of the concrete to slip on the more or less greasy bed rock under the pressure of the earth backing iron bolts 2 in. in diameter are sunk into the rock and project up into the concrete.

The crib dock as built is shown on the line drawing

Fig. 4. It is an open work structure of hemlock below the water line and yellow pine and oak above and all filled with the rock excavated from the canal. Along in front of the ore yard the dock will carry the front leg of the Brown hoists and this portion of the dock is strengthened to provide for this load. To hold the dock against slipping on the bed rock ing the clay to the rock. In the extreme foreground the rock has been drilled as indicated by the wooden plugs in the drill holes but has not yet been blasted. The long arm derrick in the center of the view is on canal bottom working toward the front of the picture and is lifting the blasted and broken rock into cars on top of the yet uncompleted portion of the

FIG. 2.—GENERAL VIEW, ILLUSTRATING METHODS OF OPERATION.

heavy old car axles are imbedded in the rock and project up just in front of either the front or rear walls of the cribs. The cribs are also tied back by heavy iron rods either to anchor piles specially driven or to the piles supporting the concrete ore yard.

Fig. 1 herewith gives a front view of the dock and a general view of a portion of the furnaces and of one of the Brown hoists which span the ore yard in process of erection. The portion of the canal shown in the photograph is excavated to its ultimate depth. The bottom is rock and it is seen how the rock beneath the cribs and above canal bottom diminishes in thickness from right to left. The total height of the crib work shown is 31 ft.

crib dock. From there the rock is taken to fill in the cribs and the excavated space of the cribs. In the right hand upper corner are the furnaces of the iron company.

Just inside the shore line the canal is crossed by the Hamburg turnpike, a highway of considerable importance. To provide for this crossing a Scherzer rolling lift bridge will be built with a clear span of 80 ft. This will be operated by electricity furnished by the iron company. A temporary crossing of the canal is now effected on the dam which separates the "wet" work in the lake from the "dry" work of construction inside the lake shore.

The view in Fig. 3 is taken from this canal dam and shows the entrance and approach to the canal from Lake Erie.

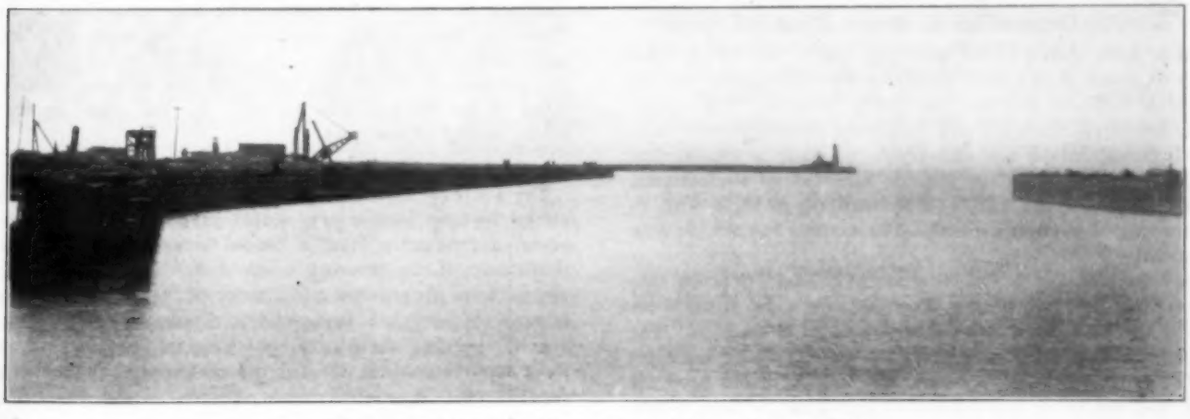

FIG. 3.—ENTRANCE AND APPROACH TO CANAL FROM LAKE ERIE.

Fig. 2 is a more general view and shows some of the methods of operation. The derrick in the upper left hand corner is operating an orange peel clam dredge for the removal of the peaty mass on top of the canal area. The steam shovel just below it with a train of cars alongside is remov-

To the left of the picture is the crib and pile dock of the Buffalo & Susquehanna Railway Co., on the south side of the canal; to the right, the crib dock of the Pennsylvania Railroad on the north side of the canal, while in the distance is the main Government breakwater. The opening through this

breakwater for the passage of ships is 600 ft. wide and is indicated in the picture by the two lighthouses, the main flash-light with fog signals to the south of the opening and the smaller guide light at the north of the opening shown on the extreme right of the picture.

The work of building the canal and dock described as well as its furnaces has been in the hands of Wm. A. Rogers, president, and Hugh Kennedy, general manager of the Buffalo & Susquehanna Iron Co. Col. T. W. Symons, of the Army Engineer Corps, was the designing engineer of the canal and docks and has exercised general supervision over them as consulting engineer since their inception. George O. Wagner

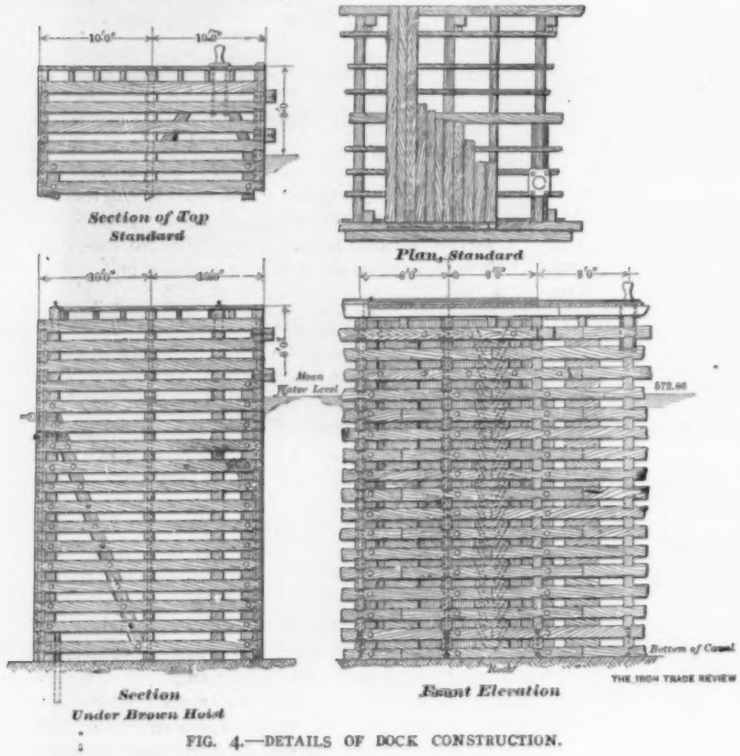

FIG. 4.—DETAILS OF DOCK CONSTRUCTION.

has been the resident engineer in charge. The entire work has been done under contract with the Buffalo Dredging Co.

Competition in Armor Plate.

Bids were opened at the navy department Jan. 12 for 7,828 tons of armor plate for the battleship New Hampshire and the armored cruisers Montana and North Carolina. The aggregate bid of the Carnegie and Bethlehem companies was identical, $3,204,700, the first delivery to be made in six months. The lowest bidder was the Midvale Steel Co., of Philadelphia, whose aggregate bid was $3,128,781, delivery to begin Aug. 15 at the rate of 500 tons a month. The contract has not yet been awarded.

A high official of the Midvale Steel Co. said: "On the face of the bids, the Midvale bid does not seem to be as big a cut under the Bethlehem and Carnegie bids as it really is. The difference seems to be only $10 a ton on an average, the Midvale bidding $3,128,781 for the 7,828 tons, or about $399 per ton, and the other two companies $3,204,700, or $409 a ton. But if the Government were to accept the bid of the Carnegie or Bethlehem companies it would have to pay $33 additional on each ton as royalty. This makes their bids $43 a ton higher than the Midvale bid, instead of only $10, as no royalty must be paid on our process."

Concerning the plans of his company Vice President James F. Sullivan said: "Within a month's time the Midvale Steel Co. will be able to turn out enough armor plate to meet all the needs of the Government. The works are turning out plate on the contract given us a year ago but in nothing like the quantity that we can produce within another month. By that time the additions to the plant will be completed and ready to be placed in operation. The enlarged works will then give us a capacity equal to all the needs of the Government under its present naval program.

"We are obliged to withhold all information on our work intended for war purposes, which fact gives rise to the reports of secrecy in regard to our new process of making armor plate. The process is not exactly a secret which could be disclosed in a line or two. It is a growth, a development, that required years of experience and years of experimenting to produce. It does not include either the Krupp or the Harveyized processes of armor making. On this account the Government does not need to pay any heavy royalties on any plate contracted for with us. With everything taken into consideration, the royalties and the reduction in bids by the two older companies, the Government has effected a saving of from $100 to $150 on each ton of armor plate since the Midvale company entered into the field something like a year ago. As to our process, we could not describe it if we would, except in a very lengthy form, for it would be the history of the development of an enterprise, just like the history of the making of a newspaper."

The following firms have sent handsome and useful calendars: Cleveland Pneumatic Tool Co., Cleveland; the Whitman & Barnes Mfg. Co., Chicago; F. E. Myers & Bro., Ashland, O.; Duluth Corrugating Co., Duluth, Minn.; American Sheet & Tin Plate Co., Pittsburg; Samuel Diggs, Kansas City, Mo.; Vulcan Iron Works Co., Toledo, O.; H. B. Underwood & Co., Philadelphia; A. W. Harris Oil Co., Providence, R. I.; S. M. Jones Co., Toledo, O.; Manville Bros. Co., Waterbury, Conn.; Diamond Drill & Machine Co., Birdsboro, Pa.; Marion Steam Shovel Co., Marion, O.; Billings-Chapin Co., Cleveland; Friction Pulley & Machine Co., Sandy Hill, N. Y.; and Wm. H. Wood, Media, Pa. The Cleveland Pneumatic Tool Co. has anticipated a probable demand for the artistic calendars selected this year and is sending out a neat card with prices for the pair or singly in condition for framing purposes. The American Sheet & Tin Plate Co. uses the MF trade mark in ingenious style and appreciates postal card requests. The S. M. Jones Co. has a fine photograph of its late head and the calendar contains many of his characteristic sayings. All the calendars have points worthy of comment.

The souvenir number of the *Blacksmith and Wheelwright* marks the 25th anniversary of that paper. The familiar red cover of the regular issue is hidden between the neat folder illustrative of the working smith and his surroundings as viewed from the exterior and interior of the shop. The usual features of note are appropriately supplemented by special articles. Among these is a brief biography of each of the three men responsible for publishing, business and editorial departments. A roll of honor appears in the advertising section with names of firms having at least ten years' connection with the journal. The list is a substantial endorsement of the paper founded by M. T. Richardson in 1880.

The Detroit Trust Co., Detroit, as receiver, has sold the property of the E. C. Clark Machine Co. for $6,100 to the C. C. Wormer Machinery Co.

Changes in the Relations of Employers and Employes in 1904.

Among the developments of the year 1904 in the metal-working trades none are of more interest and importance than those affecting the relations of employers and employes. From week to week *The Iron Trade Review* has paid special attention to the issues that have arisen in the labor world of iron and steel works, machine shops, foundries and other metal working lines. The question that comes up, as manufacturers face a year that gives good promise of activity, is whether the year 1904, with its slackening of operations that had been at too swift a pace in 1902 and the first half of 1903, had brought any definite change in the attitude of the labor unions; whether any permanent gain had been made in freedom of employment and in freeing industry from the artificial restrictions of union decree. A number of well known officers of employers' associations in the metal trades were asked for their opinions, the questions, for the sake of definiteness, being put in the following form, but general discussion apart from these questions was also solicited:

Have the unions in the metal trades modified their position to any extent in the past year, or are employers less hampered by unjust restrictions than was the case a year ago?

In your opinion have the employers' associations made any marked advance toward a better permanent policy with workers in their respective industries?

Do you consider that the employment bureaus have had any important part in bringing about the improved labor conditions that exist in many shops today?

What is the outlook for the extension of the "open shop?"

Some of the replies received are given below:

Chas. F. Waltz, Secretary Employers' Association of Cincinnati.

I must acknowledge that I see very little improvement in the unions in the matter of unjust demands and restrictions, from a year ago. My experience here has been that in all contests with the unions, though defeated, as they have always been, they would immediately proceed to reorganize and make themselves stronger, if possible, and renew and repeat demands just as unjust and reprehensible as the ones preceding the contest that ended in their defeat.

The unions do not appear to learn the lesson that their policy is wrong, and that they will have to become more sane and more reasonable in order to be victorious. In other words, they have not learned, as far as my observation goes, the lesson that there is a greater force than brute strength, and a better method of fighting than slugging, murder and dynamiting. I think in Cincinnati the demands of the unions will, almost without exception, be fully as arrogant, unreasonable and unjust as the demands of a year ago. It is barely possible that they have not been whipped enough times in Cincinnati to cause them to reflect and change their policy.

I believe, in Cincinnati, that it is absolutely true that the unions will be a little slower to strike, but I don't believe that this is because of any improvement in the personnel of the membership or of the leaders, but because of the fact that they are afraid of defeat. This fear of what may happen to them may, of course, prevent their insisting too strongly on some phases of their demands.

I size up the situation between employers' associations and the unions to be as follows: First, that the unions will strike whenever they believe they can whip the other fellow, and that they will build up and recruit their ranks as rapidly as possible, and, second, that the employers' associations, standing for law and order and the supremacy of the constitutional right of the citizens to work, with or without membership in the unions, and being very strong because of the class of people who constitute their membership, will invariably succeed in defeating the strikers. Neither one of the above propositions means the permanent settlement of the question; but on the contrary, both propositions and theories of both parties seem to be based upon the old idea that "the best man wins." I think there is great need of education for both employers and employes.

Employment bureaus have unquestionably done much to bring about improved labor conditions in many shops.

The open shop proposition is here to stay. Not alone are the employers demanding the open shop, but public opinion is revolting against the closed shop proposition, because it is clear to all thinking people that the closed shop is contrary to the principles of this government, and is in derogation of the liberty of the citizen. The right to work for whomsoever one can, and for such wages as may be agreed upon, is indefeasible, and while the principles upon which our government exists continue to be fundamental in our national life, so long must the closed shop proposition be at war with these principles.

Cincinnati, O.

Antonio C. Pessano, President N. F. A.

From the experience of the past year, I feel safe in saying that the general conditions between emloyer and employe are better today, at the closing of the year 1904, than they have ever been before in the history of the world. I believe this is due altogether to the strong organizations which exist among the employers themselves. It has taken quite a number of years to bring the employers up to the point of realizing that an employers' association should stand for something more than the tearing down of wages and the opposition to fair treatment of their employes. Today the whole thought animating the best employers' organizations of this country circles around a very high standard of equity and justice.

The employe today is perfectly safe and sure of securing all that he should be justly entitled to, if his employer is a member of an employers' association, for the reason that the association itself will not stand for unfair wages or unfair treatment. After all, it has been the two subjects just referred to which have driven so many men into unions in the past.

The unions themselves have been badly managed and their power misused not only to the detriment of the men themselves, who make up the unions, but to the detriment of the employer and to the detriment of the general public as well. This has gone on to such an extent that the employes of this country are welcoming the day that is now at hand, for they feel safe from imposition because of the high standard and the well established policy of employers' organizations, in seeing that employes of any member of the association are treated fairly and justly. This is as it should be, and marks a very decided advance in the methods to be used in securing industrial peace.

I believe further that with the better conditions which are guaranteed employes through the employers' associations the employe is very much better off by making his own personal agreement with his employer; for the employer has been taught through his association membership that it is better to give his employe that which he is justly entitled to, and which he would be willing to give in the event of his employes asking for the same collectively through a trade union.

The employment bureaus connected with the different employers' associations have played a very important part in bringing about the changed conditions which exist today. The employe has received a very marked benefit from the establishment of these bureaus in many ways. They are likewise a benefit to the employer who can obtain the names of competent men in the different trades, securing this information from the

office of the association to which he belongs and always feeling that the same is reliable and that the men whose names are furnished are men on whom he can depend, both as to their skill and as to their morals. At any rate the employer seeking employes through the burçau is furnished with a list of the men together with their credentials or history. This in itself tends, and will continue to have a still greater tendency, toward the improvement of the employes. They will find that the better records they have both as to their ability as mechanics and their character in general the more surely will they secure quick employment. Thus the tendency of employment bureaus will be to elevate the standard of employes, which in turn will have a beneficial effect and enable the employe to be a better money-earner than before. His record in the employment bureau will be his "diploma."

As to the open shop, there is no doubt that freedom of employment to every one is the only true American idea and must necessarily continue to extend. The right of every man to employment must not be denied. Any policy contrary to this, and which will close the doors of a business house, bank, or industrial establishment to a man, woman or child, because they are not members of a certain labor organization is worse than criminal and certainly cannot continue. The revulsion against the "closed shop" so-called is simply the natural outgrowth of righteous indignation at the tyrannical methods pursued by the unions themselves.

We have passed the threshold of a new year. We hope that the olive branch will continue to occupy a prominent place in all branches of industry and that the freedom of the American mechanic is now at hand and that he will continue to hold on to and take advantage of the opportunity to secure for himself and family release from the union oppression under which he has been working for some years back. Today there is a new order of things. This is the moment of his greatest triumph. His opportunity lies in joining forces with his employer, and relying on his employers' association for justice and fair treatment, he is sure of his reward.

Detroit, Mich.

Chas. E. Hildreth, of P. Blaisdell & Co.

The year 1904 has been an epoch-maker in the labor question, in that it has brought to the surface the real head of the hydra that has been seeking the vitals of trade conditions for many years past. The real struggle is for supremacy between the employer and the labor leader, to determine which shall be in actual command of the situation. This contest has been carried on under various pretexts, such as a reduction in hours, a minimum wage, the abolishment of the premium and apprentice systems; but one and all have meant the ultimate control of the business.

The employers' associations have, however, this past year compelled their opponents to come into the open and forced them to declare that what they are really after is the "closed shop," or more plainly speaking absolute control of not only who shall work in it but just what the policy and management shall be. The employers have therefore sounded the clarion note of their policy in no uncertain tone—the "open shop." It would be useless here to enter into a discussion on the merits of the question, as that is not the purpose of this letter, but to state briefly what has been accomplished in the past year.

The policy of the "open shop" having been declared, the employers' associations all over the land have been a unit in putting it into effect.

The great machinists' strike in Chicago last summer is a striking example. There the International Association of Machinists arrayed its united strength to defeat the National Metal Trades Association but failed utterly. The same struggle has been going on all over the United States; but the "open shop" has marched steadily forward and is with the opening of the new year an assured fact. What the benefits are or the disadvantages, if any, we are not to discuss here; the bare fact remains and cannot be disputed.

With the growth of the employers' associations have grown the employment bureaus, not as a menace to labor but a positive benefit. Here the laborer finds a ready market for his product, labor, and that without wasting valuable time. Here the employer finds readily the article he is most in need of, labor, and that too in the shortest possible time. Here, too, under the ultimate workings of the system, will the laborer find means for redress for many of the wrongs heaped upon him by the jealous foreman or the prejudiced superintendent.

The real purpose of these bureaus being for the equal good of both employer and employe, they are rapidly coming into favor and are now being brought into closer touch by the organizing of their secretaries, that they may be a benefit to one another in making the service of their respective bureaus better.

The idea of these bureaus was first put into active operation by the National Metal Trades Association two years ago and their active development is a result of the great good they have accomplished even during the dull period that has just passed. It is confidently expected that with a revival of business they will prove themselves invaluable to both sides.

The radical and unjust actions of the labor leaders have aroused the employers all over the land to determined action. Local associations are now in every city. National associations have come to stay and are a positive unit in the matter of defending both the employer and employe in the exercise of their inalienable rights under the constitution. Freedom for all is their motto and the "open shop" the slogan of every true American citizen. Patrick Henry's immortal words were never truer than they are today—"Give me liberty or give me death"—for without this liberty of action death is the only result to our industries in America.

Worcester, Mass.

M. H. Barker, American Tool & Machine Co.

I have your letter asking questions in regard to labor issues. In answer to your first question, in which you ask, "In your opinion have the employers' associations made any marked advance toward a better permanent policy with workers in their respective industries:"

I doubt very much if there has been any permanent betterment made with workers in the respective industries. While I think there has been some advance in this matter I am afraid it has not been permanent and the labor unions are simply held in abeyance on account of fear of the different employers' associations—they do not know how strong or how weak they are at the present time.

Second question—"Do you consider that the employment bureaus have had any important part in bringing about the improved labor conditions that exist in many shops today?" Yes, I do. I think that the employment bureaus have done a vast amount of good to the different manufacturers who are interested in these bureaus.

Third question—"What is the outlook for the extension of the 'open shop?'" I think the outlook is very good, and hope and trust that at no distant day there will be no question that the "open shop" is the right thing and that both employers and employes will see that it is for the best good of all.

Boston, Mass.

J. W. Gardner, Gardner Governor Co.

I believe that the employers' associations which have been so generally formed throughout the United States are responsible, in a large measure, for the increased conservatism which is being shown by the labor unions all over the country.

Labor conditions generally, I believe, are very much more favorable to the manufacturer than they were a year ago, and employers are less hampered by unions dictating in regard to shop conditions.

The establishment of effective employment bureaus up to the present time has been so limited that I think it too early to venture an opinion upon their benefits.

Quincy, Ill.

F. W. Job, Secretary Employers' Association of Chicago.

Answering your first question as to whether in my opinion the employers' associations have made any marked advance toward a better permanent policy with workers in their respective industries, I say emphatically, "Yes." Employes have learned the lesson that through systematic organization of employers there is to be collective bargaining, and that the unions instead of having one employer to deal with, and often at their mercy, now meet them in a united body. As a consequence employes have greatly modified their position and are much less arbitrary in their demand than before employers were organized into associations; and employers and manufacturers are now conducting their businesses with less annoyance and restrictions than has ever been the case in the past.

With reference to the part employment bureaus have had in bringing this about would say that they have been great factors, as they have been the source of supply to the troubled employer for efficient and competent men—men above the level of the indifferent, mediocre, dyed-in-the-wool union man, whose principal claim to ability is brought about through his allegiance to his union.

As to your third question with reference to the outlook for the extension of the "open shop" would say that the mail of this office is a splendid barometer, for almost every mail brings reports of the "open shop" being established in some new industry or new locality. Union members have at last awakened to the fact that they have not a monopoly of business, and that the money they have have paying into the union in the past has been in many instances worse than wasted in the employment of inefficient and unreliable officers and the payment of their funds for benefits, etc., in cases ot useless and hopeless strikes, without adequate return. They have learned that their money had better be spent upon their families.

Trades unions have lost largely of their membership during the past twelve months principally because of the formation of employers' associations whose members have said to the workers, "We will hire you regardless of whether or not you belong to a union, thus re-establishing the constitutional right of every man to work for whomsoever he chooses." Employment bureaus are rapidly taking away the prestige of the business agent and secretary of the unions, who claim to get jobs for men in some instances.

It will be a case of the survival of the fittest, and the unions that are properly educated, disciplined, and abide by the law are the only ones that will live after the mushroom organizations have gone into dissolution.

Chicago, Ill.

P. B. Kendig, Seneca Falls Mfg. Co.

The general labor situation that comes within the limited range of my personal observation indicates that the unions **per se** do not show much change of heart or front, but a large percentage of individual members appear to take a more reasonable view of the general situation, are much less inclined than formerly to look for trouble, magnify trifles or obstruct reasonable shop discipline, are also less resourceful in expedients to hamper production and to make themselves generally disagreeable.

It would look entirely reasonable to credit the various employers' associations with a good part of the apparently improved conditions although the inability of the agitators to "fool all of their followers all the time" is also an important factor in the good result.

Employment bureaus where fully established are without question large contributors to the better feeling between employers and employes, and as they become better understood, will be more appreciated until in the very near future, they must be considered as absolute necessities. The open shop is, I believe, a firmly established condition and no serious obstacle to its full development and extension is now in sight.

Seneca Falls, N. Y.

J. L. Ketcham, Brown Ketcham Iron Works.

"Have the unions modified their position to any extent in the past year?" Their "position" is the same. They have not been quite so aggressive, perhaps because work has not been quite so abundant.

"Are employers less hampered by unjust restrictions?" A little gain has been made in resisting unjust restrictions.

Yes, the employment bureaus are doing good. They are to the labor field what the commercial agencies are to the business world. Moreover, the labor bureau will ultimately be more useful to the good workman than to the employer.

Yes, the outlook for the "open shop" is encouraging. It is bound to come. During the past week our neighbors, the Chandler & Taylor Co. succeeded in getting their shops "open" and they say they will stay open.

Indianapolis, Ind.

Employers' Attitude Changed.

A member of the Administrative council of the National Metal Trades Association writes:

I do not know from personal experience that there has been any considerable change in the labor unions' attitude toward the manufacturers. I have not noticed any modification of their position. As we all know, there has been a considerable lull in the manufacturing industries and this naturally has given us a quiet year from the standpoint of labor controversies. I believe, however, that the activities of the unions in the direction of unjust restriction have not been lessened and with an improvement in our business we will again meet with the usual attempts from the unions to hamper us in the conduct of our business.

In my opinion, employers' associations have made a considerable change in their attitudes towards labor unions, and this year are less inclined than previously to make any agreements, most manufacturers and associations of manufacturers feeling that up to the present time agreements have been of little success, either to unions or to the employers and that the manufacturer is better off without agreements.

I believe that employment bureaus have and will continue to have a very important part in bettering the labor conditions in our shops. I believe the labor bureau is the best possible means for securing conservatism in the attitude of labor unions.

I believe that the "open shop" idea is becoming very much more prominent in the minds of all manufacturers. They no longer debate the question; they have given up feeling timid over the issue, and when the alternative of open shop is placed before them they are ready to make whatever sacrifice is necessary to maintain the open shop and will not listen to any other method of conducting their business.

A. Falkenau, Falkenau-Sinclair Machine Co.

1. In reply to your inquiry I beg to say that the year 1904 has brought employers more closely together than heretofore, and the need of recognizing the "open shop" as a fixed principle is being appreciated throughout the entire country.

2. The unions are as aggressive as ever, but owing to the dull state of trade have not been able to exercise as much pressure as heretofore.

3. The employers' associations have been greatly strengthened, and this in itself will lead to a better permanent policy in the relations of employers and employes.

4. The employment bureaus unquestionably have greatly

aided in improving the labor conditions in the shops. Many men, realizing that they do not require the unions in order to obtain employment or just treatment, are assuming a more independent condition and leaving the unions.

The "open shop" policy no doubt will be very largely extended, and has been declared in various industries that have maintained the closed shop for years. The fact that better conditions exist at present should not influence employers to relax their efforts in establishing permanent and satisfactory relations with their employees in their shops through concerted effort. All indications are that business generally will be better, and with improved business greater activity on the part of the labor agitators may be expected.

Philadelphia, Pa.

O. B. Kinnard, Kinnard-Haines Co.

I am convinced that labor unions have not modified their position one iota. They are simply resting on their oars, husbanding and recuperating their strength during this time of somewhat depressed business conditions, rallying their forces, laying plans of campaign preparatory for a renewal of hostilities immediately upon the first substantial evidence of a revival of business activities. I attribute the fact that the manufacturing interests of our country are at the present time enjoying comparative freedom from strikes, boycotts, etc., partly to the general business depression that has existed throughout the past year in almost every line of manufacturing and not to any apathy on the part of organized labor. When the industrial conditions are such that there are three applicants for every two positions to be filled, labor agitators find that their arguments fail in either terrorizing the laboring public or in reaching responsive chords in the hearts of their followers, especially if business depression has been of long duration.

Probably the employers' association is the most potent factor in checking those features of unionism known generally, and I believe correctly, as lawlessness, anarchy and un-Americanism. In illustration one might site the practical enforcement of membership in the union, picketing, intimidation, limitation of output, etc.

Virulent diseases require radical treatment; and it has been necessary to check, by the use of the strong arm of the law, the violent excesses into which the unions so frequently plunge. This can best be done by a strong employers' organization acting in support of the law. Thus, as the result, I believe, of labor union aggression, we have the peculiar condition in free America of two great armies, the employers' and the employees' associations—call them by whatever name you wish—facing each other in industrial and oftentimes in deadly conflict. Though not a pessimist regarding the future of our country, it is my belief that unless union excesses are checked by public opinion the result will be disastrous to our free American institutions. So long as the tenets of labor unionism, manifested by the action of the union leaders and given form in acts of lawlessness of their henchmen, are winked at by politicians and by those sworn to uphold and enforce the law and are left unpunished, just so long will it be necessary to oppose unionism by the organized army of the employers.

Employers' associations are an absolute necessity for the maintenance of industrial peace, just so long as the present manifestly hostile forms of organization, as presented by the unions, are maintained. Employers' associations not only offer physical opposition to the encroachment of the trades unions upon the rights of the individual, but by the dissemination of literature on the subject and by various ways of informing the general public of the retarding effect the unions' past attitude has upon manufacturing interests of the country, bring about a recognition of the fact that "perfected labor unionism" would mean the sweeping away of our republican form of government and the substitution of a "chaotic anarchy."

I am of the opinion that employers' associations should be perfected in every line of manufacturing where the virus of labor unionism is detected and that such employers' organizations should work in harmony with all other kindred organizations and should affiliate with all Citizens' Alliances. We would thus unify and centralize a power which can furnish backbone to those who are placed in elective offices and who are sworn to administer, without fear or favor, those laws made and provided not in the interest of class, sect, secret order or persons assuming the possession of special privileges, but in the interest of the whole people.

I believe that where manufactories are large and numerous, such as New York, Chicago and other large cities, employment bureaus are beneficial to both employes and employers. I believe they tend to raise the standard of efficiency as well as the morale of the employe and oftentimes prevent abuses on the part of the employer. There is, however, in the labor bureau idea, if made universal, that element of paternalism toward employes that is repugnant to the free American idea of individualism.

Every man should have the right and be protected in the right, to seek employment, obtain it and enjoy it without asking leave or license of anyone excepting those of whom he seeks employment. Unquestionably the trend of manufacturers, and I believe of the thinking public, is now toward the unrestricted opportunity and right of every laboring man to work where, when, as long and with whom he pleases, regardless of the dictates of unionism.

In my opinion, the open shop has come to stay, unless it be because of the pernicious activity of labor leaders and agitators, who compel employers, in order to protect their rights from the periodical attempts of such leaders and agitators, to force upon them their mandates, and thus compel employers to run "closed shops" with the unions on the outside. Labor union leaders are asking the question "How are we to propagate and increase unionism if we permit the open shop?" The sane man will ask the question "How are we to maintain the principles of the constitution of our country if the closed shop idea should become universal?" Either the closed shop idea must go or the constitution of the United States must be declared of no force or effect.

Lasting benefits to our country have only been secured at the expenditure of great energy. It will require great energy on the part of the employers and the public generally to force a complete return to and maintain the open shop.

Minneapolis, Minn.

From a Representative of the Pittsburg District.

The past year has been in this section and probably throughout the country, one of the dullest in history from a business standpoint, and labor unions have naturally been quiet and very slow to take the initiative in any aggressive move to force changes either in wages or working conditions. On the other hand, their general aim has been to hold fast to conditions and wages obtained previous to the depression.

The "open shop" policy gained great favor among the employers during the year, although actually enforced in this particular vicinity by only a few employers. As a whole employers are less hampered by unfair restrictions than they were during the year 1903, but the stand taken by the unions is the same.

Labor bureaus are supplying a want long felt by employer and employe. When properly conducted—in most cases I believe they are so conducted—they serve the same purpose for the employer as the clearing house does for the bank, and for the skill of the employe it acts just as the exchange does for the security.

I firmly believe employers' associations have accomplished much towards a better permanent policy between the employed and the employer in the way of establishing methods

of arbitration in the settlement of disputes and also by promoting the individual form of agreement. The latter will no doubt in time obtain and when it does obtain, mechanics of the better class will receive higher wages than ever before and constant employment. I am of the opinion that when this class of men realize the advantage of giving individual attention to their own affairs as well as to their employer's interest a harmonious feeling will exist between the two that will serve in a great measure to bar away trouble.

Pittsburg, Pa.

W. P. Eagan, Commissioner of the N. M. T. A.

The status of labor issues with which we come in contact is greatly improved from our standpoint. I do not believe that this is due to any modification of the position taken by labor leaders but rather to the fact that during the year past unionism has suffered in common with business interests from extremely depressed conditions. Employers' associations in all lines have doubled in strength and in rational methods of work. Employers are prepared today as never before to maintain just conditions in their establishments. On the other hand, the unions are bending every effort toward more thorough organization. Large sums of money are being spent in this work, and until further tests are made, the relative strength of the opposing forces will be undetermined.

I believe that there is a more settled policy on behalf of employers' associations in their attitude toward their fellow workers. The whole sentiment has crystallized on the open shop proposition, meaning by that that they are institutions in every respect and not merely places in which union and non-union workmen are employed.

There is no doubt that the employment bueaus maintained throughout the country have played an important part in the development of employers' organizations and in the improvement of the personnel of the employes in the institutions maintaining such bureaus. Through the operation of these bureaus, and because of the excess supply of labor in all branches, employers have been able to make a selection based upon the complete records kept, which has resulted in raising the standard in many plants.

As to the outlook for the extension of the open shop, I believe it has never been brighter. Employers are not only convinced that the closed shop is irrational and illegal, but that it is expedient from a purely commercial standpoint. It has been demonstrated conclusively that the strictly closed shop, meaning the shop in which union men are employed exclusively and in which all union conditions are rigidly enforced, cannot compete with free institutions, and the workmen themselves under such conditions are not permanently benefited. The public at large has been thoroughly aroused on this subject and the sentiment in favor of freedom of employment was never stronger.

Cincinnati, O.

Dr. R. S. Woodward, president of the Carnegie Institution of Washington, announces that the award of a special grant of $2,500 has been made to Prof. Charles F. Burgess, of the department of electro-chemistry and electro-metallurgy of the college of engineering of the University of Wisconsin with which to pursue his investigations on the properties of pure iron and its alloys. The grant is a marked recognition of the important work which Prof. Burgess has been carrying on for several years. The investigation for which the grant was made was begun by Prof. Burgess and Mr. Carl Hambuechen three years ago. The results were published in *The Iron Trade Review* of May 12, 1904.

Suit has been brought by the Union Trust Co., Detroit, against the Welded Steel Barrel corporation and Alvinus B. Wood, Detroit, to foreclose a mortgage for $41,000, executed in 1901.

OBITUARY.

William Barnet LeVan, a well-known mechanical and consulting engineer, died at Newark, N. J., Jan. 7. He was born in Easton, Pa., in 1829 and lived for many years in Philadelphia. He was an authority on steam and steam boilers and was the author of several text and hand books on those subjects. He was a life member of the Franklin Institute and one of the oldest members of the American Society of Mechanical Engineers. He put in the first hydraulic lift in Philadelphia.

Fayette R. Plumb, a prominent manufacturer of Philadelphia, died Jan. 7 at Hot Springs, Arizona, from pleuro-pneumonia. Mr. Plumb was born in Gowanda, N. Y., May 2, 1848, and began his commercial life in 1867, in the employ of Lloyd, Plumb & Co., hardware merchants of Philadelphia. In 1869 he associated himself with John Yerkes, in the manufacture of edge tools. Later he became a member of the firm, the firm name being Yerkes & Plumb, and the works were moved from Frankford to Bridesburg. Mr. Yates retired in 1888, Mr. Plumb becoming the sole owner of the plant, which was moved back to Frankford and has been gradually enlarged until 500 hands are employed. Mr. Plumb had been president of the Manufacturers' Club of Philadelphia for four years and was prominent in the Philadelphia Hardware Manufacturers' and Merchants' Association and the American Hardware Manufacturers' Association. He went to Hot Springs with a daughter who is in extremely delicate health.

Samuel Forter died at his home in Bellevue, near Pittsburg, Jan. 8. He was born in Switzerland in 1851, and, after graduating from a leading polytechnic school in Europe, came to the United States in 1881. He was the inventor of the well-known Forter water sealed gas producer, Forter water sealed reversing valve and Forter furnace charger, as well as of other devices now commonly in use by steel companies. For four years previous to his death Mr. Forter was chief engineer and vice president of the Forter-Miller Engineering Co., Pittsburg.

Henry J. Taillie died Jan. 11 at his home in Rochester, N. Y., in his 70th year. He was engaged in the foundry business from 1872 to 1891, when he retired.

The announcement has been made at the general offices of the Pan Handle railroad at Columbus, O., that the company has placed an order for 4,000 steel cars with the Cambria Steel Co. and Standard Car Co., for delivery in February and March. There will be 1,500 all steel, self-cleaning, hopper cars; 1,500 drop bottom cars and 1,000 straight gondola cars. In addition to placing a contract with the American Bridge Co. for the structural iron work for its elevated line in Pittsburg, the Wabash is reported to be about to give an order for 2,500 50-ton steel cars. The Chicago, Rock Island & Pacific had ordered 10 coaches and 10 chair cars of the Pullman Co. It is reported that the Norfolk & Western is about to order 1,500 freight cars, 11 coaches and 19 baggage cars. The New York, Pennsylvania & Southwestern has ordered 200 steel cars of the Cambria Steel Co. and 12 cabooses of the Georgia Car Co.

The next monthly reunion of the American Society of Mechanical Engineers will be on Tuesday, Jan. 31, at the society house in New York. The subject and speaker will be "Epochs in Marine Engineering" by Rear-Admiral Geo. W. Melville. The speaker for the meeting of Feb. 28 will be James M. Dodge, of the Link-Belt Engineering Co., Nicetown, Pa., but the subject has not yet been announced.

On account of the heavy demand for steel, the Duquesne Steel Works of the Carnegie Steel Co., Pittsburg, did not shut down last Sunday, as is customary.

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THE DISTRIBUTION PROBLEM OF THE COMBINES.

A communication in another column cites an experience illustrating a tendency of the sales organizations of large corporations. The weakness of their position in so far as there has been an under-valuing of direct communication and personal contact with the buyer, has been pointed out in previous comment in these columns. It should be appreciated that the big corporation is not as popular with the buyer, to begin with, as the smaller producer. The study of the sales departments of the "trusts" should be not how to add to the refinement of their system of getting and filling orders, so much as how to reduce to a minimum the drawbacks of a cumbrous organization, with its divisions and subdivisions, and the natural disposition of division heads to get high department efficiency, often at the expense of the general result. The rigidity of consolidation system, as exemplified in the iron trade, has unpleasantly impressed itself on buyers in recent years, and it is not surprising that they have often shown in tangible ways their appreciation of the adaptability of the selling departments of the jobber or the so-called "independent" manufacturer.

Perhaps in no feature of the Standard Oil Co.'s system has it been more successful than in its effort to connect with the consumer. The ramifications of its vast distributing machinery are to every corner of the well settled portions of the country. That such an expensive selling equipment would have been justified without nearly complete control of production may well be doubted, and the case is not parallel with conditions in the iron trade; but it is at least suggestive of the way in which popular prejudice against aggregated capital has been offset by skillful handling of the selling problem.

In the iron trade there has not been that elimination of the middle man that was predicted when the consolidations succeeded so large a number of the smaller manufacturing companies. The great corporations seem to have recognized that the jobbers, with their corps of salesmen, each man having a personal following, the result of years of cultivation, could make up in a measure for the inherent weaknesses of a highly organized and too largely impersonal instrument of distribution. The question of the jobber's place in the new order of things has not been worked out either to his satisfaction or that of the large manufacturers; but it is evident that in the lines in which he has been given most recognition he has brought tonnage to the larger producers that would have been likely to fall to the smaller mills. But the jobber's stock cannot anticipate all the wide range of wants of diverse consuming interests and there will always be a variety of calls upon mills for the adaptation of rolling schedules to the urgent needs of manufacturers to whom the product of the mill is raw material that takes its place as a component in a new product. How the operations of the steel maker are to become sufficiently flexible to satisfy these needs, is the problem that consolidations have done little to solve. Great tonnage is still the desideratum, and rolling schedules that give the fewest changes of rolls. In other words, the effort is constantly made to train the consumer in adaptation to the mill program.

There are indications that Steel Corporation officials appreciate that the problems of the operating department have had, not too much, but disproportionate attention in the formative years of the combine. Economies of manufacture have undoubtedly been studied to good purpose, and savings have resulted that bear out much that was claimed in the beginning, on the benefit side of the consolidation account. It is equally certain that no great progress has been made toward the cure of distribution evils that are the direct result of consolidation. This is the direction in which the salesman talent of the consolidation has the largest opportunity to distinguish itself. The question is not how the consumer is to become more reconciled to the situation, but how the situation is to be made more acceptable to the consumer.

THE RECORD IN PIG IRON CONSUMPTION.

With blast furnaces definitely scheduled for resumption before the end of January, the American iron industry will enter the month of February producing pig iron at a rate clearly in excess of 21,000,000 gross tons annually. Nothing to the contrary being now known, the country will be expected, for domestic consumption and exports, to call for a continuance of this rate for some time. To absorb this production, in one way or another, will of course involve a greater consumption than has yet been shown. It is well recognized that the country, regarded both as a consumer and as an exporter of iron products, has grown, but however the amount of growth is estimated, it is necessary to know what its absorptive power has been in the past in order to arrive at any conclusion as to the possibilities of the future. On this question some light can be thrown by statistics.

It is misleading rather than helpful to refer to the production of pig iron in previous calendar years. In 1902 the United States produced 17,821,307 gross tons of pig iron and in 1903 there was produced 18,009,252 gross tons. Although these were record years, neither was representative. In 1903, in particular, the year was partly good and partly bad, the production of the fourth quarter being quite small. The production of the twelve-month period ending with September, 1903, thus cutting off the fourth quarter of 1903 and adding the fourth quarter of 1902, showed a production of approximately 19,050,000 gross tons, and this on careful examination is found to be the record for any consecutive twelve months that can be selected.

It happens, however, that imports of iron and steel in the third quarter of 1903 were much less than such imports in the third quarter of 1902, exports being not

greatly different; and it follows that to find the twelve-month period of greatest supply, i. e., production plus imports minus exports, it is necessary to take the twelve-month period ending June 30, 1903. In this period the domestic production was 18,720,100 gross tons, or only 330,000 tons less than that of any consecutive twelve months.

The imports of iron and steel in the twelve months ending June 30, 1903, which, as noted, were exceptionally heavy, amounted to the equivalent of about 1,810,000 gross tons of pig iron, this quantity being ascertained by assuming appropriate losses in manufacture for the production of crude steel, and of finished products. In the same period our exports, reduced to pig iron equivalent by the same method, amounted to about 350,000 gross tons. Accordingly, our production of 18,720,000 tons, plus our imports of 1,810,000 tons, minus our exports of 350,000 tons, made a net total of 20,180,000 tons, which can be designated as the supply in the twelve months ending June 30, 1903. It is not intended to assume that this amount represented actual consumption; but the amount that was not utilized was by comparison rather small, and there is no occasion to split hairs on this point, for the reason that even if iron is actually utilized in a given period, it does not follow that the succeeding period can utilize the same quantity. A railroad may be glutted with new steel cars, new bridges, and replaced rails—all actually utilized or consumed in the ordinary sense—and yet cease to be a good customer.

Proceeding with the ascertained fact that in the most active twelve months that can be selected, the United States was supplied with the equivalent of 20,180,000 tons of pig iron, the prospects for the present year may be studied statistically, in the light of the import and export movement of 1904. In that year, assuming the December movement to have been at the same pace as that of the preceding eleven months, the exports have represented the equivalent of 1,350,000 tons of pig iron, and the imports 300,000 tons of pig iron, these equivalents having been determined by the same method as followed in the previous instance.

The balance of trade in pig iron equivalent, in the calendar year 1904, was therefore 1,050,000 tons, favorable to the United States. The balance of trade in pig iron equivalent in the twelve months ending June 30, 1903, was 1,460,000 tons, unfavorable to the United States. The net result shows a change of no less than 2,510,000 tons.

If we add this change to the actual production in the year ending June 30, 1903, the sum is 21,230,000 tons. Accordingly the maintenance of a pig iron production rate of 21,000,000 tons annually only involves this: that we should import no more in 1905 than we did in 1904, that we should export as much, and that we should actually consume the quantity which was supplied to the country in the twelve months ending June 30, 1903. It is certainly a distinct possibility that this can be done. While we did not put to the best use the amount which was supplied in the previous period of greatest supply, having something left over in one form or another, the country has grown meanwhile, and may this time be able fully to absorb a like or even a greater quantity.

Statistics are valuable if they are correct and if no effort is made to make them that for which they are not intended. The figures here presented are derived from unquestionable sources, and have been carefully compiled. They prove nothing as to what the United States can consume or will consume, but they present in a clearer light than has yet been done what the actual movement has been at the best period in the past, and what the present and recent movement is. Accepted in a conservative spirit, the presentation may furnish some guidance.

A TALE OF TWO ORDERS AND A MORAL.

To the Editor:

Two men met recently in a city of the Central West. Both are mechanics and successful manufacturers. They have established a record for doing things and are adept at rapid production. It is very doubtful if one at least uses anything but high speed steel wherever it can profitably be put. One of them is within a 50-mile radius of the Hub; the other is west of Pittsburg and in easy reach of Cincinnati.

Both are systematic and have perfected their shop systems to a high degree of finish. They bring pressure on all concerned, and have educated the manufacturers and dealers to store the stock they want until the moment when it must start for the machine tools or the smith. A warehouse is saved, the floor is clear of stuff in the half baked or the scrap state, and even the dealers are content. It does not work in all cases, though, and right here both are savagely sore on some selling systems.

It seems that one of them had a cable inquiry growing out of the present unpleasantness in the far East. He got the contract in spite of English and German competition and made five week deliveries on machine tools with ease and satisfaction. A second inquiry came along before he had quite regained the old gait and among the things essential was a supply of open-hearth steel for spindles. Again speed was everything. He could gamble on his designs, pledge his credit on his product, but here he must depend on some one else. He took up the matter instantly with a steel company of great financial resources, an engineering staff of the highest standing, and a highly "organized" selling force—the whole systematized to saturation. After several days came a reply—no, not from the office at the plant, but from the branch at Chicago. This involved more delay, due to side-tracking, unwinding of red tape, and other things that exasperate the buyer to whom time is not only money but the getting or losing of business. The result was the manufacturer lost the second contract before he had really a fair chance to quote on it.

The man from the East had a like story of, "We have referred your inquiry of the 'steenth to our local office at Boston and—" same finish.

It would seem that in these days of organization and yet more organization, there is still an opening in the steel trade for a sales department that puts a premium on personal contact with buyers, and that makes a point of meeting emergencies that arise in the experience of every manufacturer. There should be in every system the machinery for cutting corners and provision for the sort of special attention at the right time, that every buyer appreciates. Incidentally such an adjustable "system" might be the means of selling more steel, besides answering one of the smaller consumer's staple arguments against consolidations. B. A. O.

Record Production by Talbot Furnace.

During the last four months of 1904 the Talbot furnace of the Jones & Laughlin Steel Co., Pittsburg, produced 21,000 tons of steel which exceeds, by 3,000 tons, the best previous record of this furnace for a like period. From Sept. 1 to Jan. 1 the furnace was operated continuously, only going out a few days ago for relining. The first of the four Talbot furnaces under construction at the Jones & Laughlin plant will be started in February and the others at intervals of a few weeks.

The Labor Situation.

WAGES OF BLAST FURNACE WORKERS.

(Special Telegram.)

PITTSBURG, Jan. 18.—The blast furnace workers some time ago demanded an eight-hour day at the expiration of the present agreement. It is now understood that an advance in wages will probably be offered by the companies instead of a shorter day. The wages which prevailed prior to January of last year will probably be restored.

COSTLY STRIKE OF CHICAGO MACHINISTS.

The annual report of the business agent of the Machinists' District Lodge No. 8, Chicago, shows that in eight months of 1904, when from 500 to 800 striking machinists in Chicago were idle, $155,000 was disbursed to the members. Seventeen unions were involved in the strike and the strike benefits were $7 a week to married men and $5 to single men. The figures given in the statement do not include, it is explained, the regular expenses of maintaining the organization, which are said to have amounted to an additional $5,000, nor the "benefits" paid on account of sickness and death, the funds for which purposes were furnished by the international and the local unions of machinists. "In addition to the expense of assisting members of the union who were on strike," the report continues, "three attorneys were maintained on the pay roll of the organization, and litigation incident to the strike cost several thousands of dollars." The report concludes by announcing that the union will continue to pay strike benefits during 1905.

METAL TRADES ASSOCIATION NOTES.

W. P. Eagan, commissioner of the N. M. T. A., is in Chicago securing new members for the association. He leaves that city the latter part of this week for Toronto, Can., at which place he will address a meeting of the employers' association on Jan. 19. On the evening of Jan. 21 he will address a meeting of the New York Metal Trades Association and on Jan. 24 he will speak at a meeting of the Metal Manufactuers' Association at Philadelphia.

At the annual meeting of the New York Metal Trades Association M. K. Bowman, of the James Riley Repair & Supply Co., was elected president; Chas. L. Seabury, vice president; Christopher Cunningham, treasurer. The following will constitute the association's executive committee: H. N. Covell, Andrew Fletcher Jr., Geo. Q. Palmer, Robert S. Wyatt and M. P. Davidson. The annual meeting will be held on the evening of Jan. 21 at Hotel St. Dennis. This meeting will, no doubt, be of more than ordinary interest as the presidents and secretaries of several Eastern local metal trades associations will be present.

Chas. F. Waltz, who will be remembered as accomplishing splendid results as secretary of the Employers' Association of Cincinnati, reports that the case of Jos. Valentine is still under consideration by the grand jury.

The annual meeting of the Cincinnati Employers' Association will be held Jan. 18 at the Business Men's Club and will be preceded by a dinner. This meeting will be of particular interest owing to the number of prominent persons who will be in attendance. The association is increasing its executive committee from 11 to 17 members and the latter includes some of the most prominent business men of the city. This association has had a phenomenal growth, largely due to its efficient management.

The majority of the secretaries of the local employers' associations are advising their members that the work of the N. M. T. A., carried on so successfully during the past two years, as evidenced by the campaign managed by Secretary Wuest in Chicago and with such good results at other cities, is preventing the spread of objectionable labor union tactics and is deserving of the support of all their members. One of the local secretaries in a recent letter said that if all the members of his association were members of the N. M. T. A. the position of his association would be immeasurably stronger. This expression of appreciation by men familiar with local labor conditions is exceedingly gratifying to the officials and members of the N. M. T. A.

Secretary Wuest is receiving numerous inquiries regarding the association's seventh annual convention which will be held at Chicago on March 23 and 24. It will be preceded by a meeting of the administrative council, at which every matter of interest suggested by the members will be given consideration. In order to bring out topics of this kind Secretary Wuest is requesting suggestions tending to improve in any way the management of the association.

BAR IRON WAGE SETTLEMENT.

The bi-monthly bar iron wage scale adjustment, made at Youngstown, O., last week, resulted in a two percent advance to the finishers for the months of January and February. The average selling price of bar iron was 1.30c. No advance is given the puddlers as the average selling price must go to 1.40c before they receive a 25 cent increase. The puddlers' scale is $4.90 a ton.

United Coke and Gas Company.

The lease of the by-product coke oven business of the United Coke & Gas Co., New York, to the Semet-Solvay Co., of Syracuse, N. Y., has terminated. This puts the United Coke & Gas Co. in its former position of exploiting by-product coke ovens of the Otto-Hoffmann and United-Otto types. The number of these ovens now in operation or contracted for (2,603 ovens in the United States and Canada) indicates that by-product recovery in the manufacture of coke is now permanently established. The American Coal Products Co., 17 Battery Place, New York, will continue to act as selling agent for the tar and ammonia produced by both the United-Otto and Semet-Solvay ovens.

The board of directors of the United Coke & Gas Co. will be as follows: G. W. Elkins, W. H. Childs, I. D. Fletcher, Stephen Peabody, Albert Strauss, Eversley Childs, S. E. Barrett, Emerson McMillan, R. C. Pruyn, G. D. Widener, Edmund C. Converse, Powell Stackhouse, Dr. F. Schniewind, T. M. Rianhard. The following officers have been elected: G. W. Elkins, chairman; W. H. Childs, president; Dr. F. Schniewind, vice president; T. M. Rianhard, vice president and treasurer; E. J. Steer, secretary. The company is preparing new literature relating to its process and products.

The Youngstown Bolt Co., Youngstown, O., has gone into the hands of the receiver. W. C. Carmen has been named by the court. The capital stock of the company is $650,000. Directors of the company who applied for receiver are Robt. Bently, Henry Wick, R. C. Steece and Edwin E. McEwen. Among the assets are listed the accounts receivable which are shown to amount to $6,508.79. Doubtful accounts receivable are listed as worth $5,135.31. Accounts payable are set forth as amounting to $6,652.84 and bills payable, consisting of notes due the Wick National Bank, call for $110,000. The company is the successor of the Youngstown Mfg. Co. and has a plant at Struthers, O.

Eleven of the twelve open-hearth furnaces in operation at the South Sharon, Pa., plant of the Carnegie Steel Co., last week produced 1,624 tons of steel in 24 hours, 29 heats having been made. This breaks the best record for these furnaces by 214 tons.

Hearing on Proposed Boiler Steel Regulations.

WASHINGTON, Jan. 16.—Secretary of Commerce and Labor Metcalf today granted an all-day hearing to boiler manufacturers, steel shipbuilders and others affected by or interested in the proposed revised rules and regulations governing the United States steamboat inspection service. The reconstructed and amended regulations which were up for consideration at this meeting have been formulated by the members of the Board of Supervising Inspectors working jointly but they yet lack the formal approval of the head of the Department of Commerce and Labor, which is necessary to make them effective; and it was the desire of Secretary Metcalf to hear from all the interests affected before passing upon the proposed changes.

One of the principal speakers was Col. E. D. Meier, of the Heine Safety Boiler Co., of New York, who appeared as the representative of the American Boiler Manufacturers' Association. In opening the speaker commended in a general way the arrangement of the proposed regulations relative to boilers, expressing the opinion that it would be found much easier under this new plan to ascertain just what regulations must be complied with. His first protest was against Rule 1, Section 1, which requires that every iron or steel plate intended for the construction of boilers to be used on steel vessels shall be stamped by the manufacturer in at least five places. He declared that the imposition of such a regulation would work an unnecessary hardship upon the boiler manufacturer, as some plates are so small that it is almost obviously unnecessary to stamp thus extensively. Col. Meier said that he presumed that all that was sought by this rule was merely assurance that after the plate had been manufactured into a boiler at least one stamp should show plainly and he suggested that not more than two stamps would be necessary to insure this result.

The speaker next directed attention to Section 6 of Rule 1 which stipulates that inspectors shall visit places where marine boilers are being constructed as often as is necessary for the purpose of ascertaining and making a record of the stamps upon the material, its thickness and quality, except when the material has been tested at the mills. The speaker's plea in this connection was for hard and fast rules of universal application. He pointed out that hardship and confusion had resulted from the circumstance that not infrequently material inspected and accepted in one district would be rejected in another district when it came under the jurisdiction of another inspector.

Taking up Section 7 of the same rule which governs the testing of iron and steel plate, Col. Meier excepted to the requirement that there shall be taken from each plate four test pieces, two for the tensile test from the diagonal corners and the other two for the bending test from the other diagonal corners. He explained that if such a plan were followed the manufacturer would find it virtually necessary to make each plate four inches wider, involving additional weight of plate which would be a matter of expense to some person. He pointed out that the proposed plan was not in accord with the practice of the Pennsylvania Railroad Co. and other heavy buyers of similar classes of material.

The speaker next made emphatic objection to the stipulations of Section 8 of Rule 1 which specify that no plate made by the acid process shall contain more than 0.06 percent of phosphorus and 0.04 percent of sulphur and no plate made by the basic process shall contain more than 0.04 percent of phosphorus and 0.04 percent of sulphur. He asked that no discrimination be made between the acid process and the basic process in the amount of phosphorus and also spoke of the advisability of limiting the amount of sulphur as well as regulating the amount of phosphorus.

Attention was next directed to the provisions relative to the requirements in tensile strength, and in the discussion which this precipitated Col. Meier was warmly supported by other boiler manufacturers present. There was general concurrence in the spokesman's declaration that the upper limit of 75,000 lb. per square inch of section when tested is too high and will result in giving brittle steel. Col. Meier declared that a tensile strength of 70,000 lb. should be the outside limit for plate not touched by fire and that the outside shell of externally fired boilers should not be more than 60,000 lb.

Declaration was made that Section 4 of Rule 2 which provides in detail for riveting is not in accord with the best American practice and that it should be remodeled. Modification was also suggested in the case of Section 19 of the same rule which specifies that all copper pipe subject to pressure shall be flanged over or outward. Section 13 of Rule 2, which makes provision for the testing of steel tubes was declared to be excellent, but attention was called to the fact that no provision was made regarding iron tubes. Col. Meier contended that the need for such rigid test was far greater in the case of iron tubes than in the case of the steel, since during the past ten years the steel tubes have steadily improved in quality, whereas the iron tubes have as steadily deteriorated. The reason he gave was that most of the iron tubes are made from scrap, lacking uniformity of characteristic and that this being so they should be as carefully tested, if indeed, not more carefully tested than steel.

Capt. Rees, of James Rees & Sons Co., Pittsburg, made an exhaustive presentation particularly with reference to the requirements of boilers for steamboat service on the rivers of America emptying into the Gulf of Mexico. One of his points was against the compulsory use of the steel rivet. He declared that the heads of these rivets are very liable to come off, the work with the hand hammer so changing the character of the material as to render it unfit and unsafe and he cited in proof the relative difficulty of removing properly driven iron and steel rivets respectively. Concluding this part of the discussion Mr. Rees quoted Mr. Schwab as heartily endorsing his opinion of the steel rivet. The Pittsburg manufacturer reiterated his former statements, made in conjunction with those of Col. Meier with reference to tensile strength. He declared that the boiler plate manufactured during the years from 1878 to 1894 was superior to the present day product because the tensile strength was lower. He was willing to agree with the proviso in the proposed new regulations that the tensile strength should not be lower than 50,000 lb, but objected to the maximum of 75,000 lb. allowed, declaring that the latter limit should not under any consideration be placed beyond the 65,000 lb. mark.

Mr. Fletcher, representing the W. & A. Fletcher Co., of Hoboken, N. J., pointed out that the present regulations made stipulations only regarding single and double riveting and suggested that, inasmuch as in the manufacture of the large Scotch boilers now turned out triple riveted joints and butt strap joints are frequently employed, it might be advantageous for the manufacturer to have equally specific standards to follow in such cases. Supervising Inspector General Uhler made explanation that the Board of Supervising Inspectors has prepared a complete formula governing this more elaborate detail which it was hoped could ere long be enacted into law.

The Secretary of Commerce and Labor thereupon suggested to the Supervising Inspector General that it might be well to at once prepare copies of this proposed measure and submit same to the various boiler manufacturers of the country which a view to ascertaining whether or not it met their approval.

Some points touched upon only briefly if at all by the boiler manufacturers present were entered upon quite extensively by the ultimate purchasers,—namely the vessel own-

ers controlling steam vessels who took part in the general discussion embraced by the hearing. One of these mooted questions was that raised by Section 5 of Rule 1 which provides in part that "plates may be tested and inspected at the mills for repairs to marine boilers or to be carried in stock and such plate or plates shall have a separate record of test report in duplicate for each plate so tested, one report to be furnished through the supervising inspector to the local inspectors of the district in which the boiler manufacturer using the plate is located, and the duplicate report shall be furnished to the boiler maker who shall transmit the same to the purchaser of the material that is represented by said report. The purchaser shall deliver the same to the local inspectors at the first inspection of such boilers." Mr. Clyde, of the Clyde Steamship Co., and other prominent vessel owners objected very strenuously to the responsibility placed upon them by the necessity to hold and produce at short notice such documentary evidence relative to each repair job done upon their boilers. These gentlemen explained that they of course had no objection to the inspection of the plates at the mill, but did object to the necessity of producing the records or laying themselves open to penalty if through any oversight such record was lost or misplaced.

Secretary Metcalf incidentally explained at this juncture that all rules relative to boilers have been referred to a board of steam engineering officers of the United States Navy, and this in turn brought forth a protest from some of the prominent boiler users who declared that they did not consider it right that practice in the merchant marine should be judged by naval standards. Supervising Inspector General Uhler at this juncture explained that the only purpose of the new rule allowing repair and stock plate to be inspected at the mill was to facilitate the repairs upon boilers of vessels in active service. The new rule had been formulated especially to meet the exigencies of conditions on the Western rivers where most serious inconvenience was occasioned when it was necessary for owners to wait perhaps three or four weeks for inspection. Mr. Uhler's position was endorsed by the representatives of the St. Louis and Pittsburg steamboat owners who were present. Some other objections raised by the owners present included opposition to the plan of testing boilers by drilling to determine the thickness instead of taking into consideration the general condition of the boiler, and the contention that the requirement of greater thickness of tube sheet instead of adding to the safety of boilers would render them less safe and less durable.

An important feature of the hearing of interest in the iron and steel trade was found in the representations of the vessel owning interests engaged almost exclusively in the iron ore carrying trade. The principal speaker in this group was Mr. H. Coulby, of Cleveland, representing the Pittsburg Steamship Co., which controls the greatest fleet of iron ore carrying vessels on the lakes. Mr. Coulby spoke very decidedly against the proposed compulsory installation of a "donkey" boiler on every freight carrying steamer,—a stipulation of the new rules which has, by the way, aroused more general opposition than any other one regulation. He stated that by reason of almost wholly steel construction the question of fire on lake ore carrying boats is virtually eliminated and there is no need whatever for the "donkey" boiler which it is proposed to provide as an added safe-guard in case of fire. He asked therefore that an exception be made in the case of the lake boats.

Mr. Coulby also opposed vigorously the provision in the new regulations which requires bulkheads at intervals not greater than one-fifth the length of a ship. He explained that to enforce any such requirement in the case of lake freighters would cause the holds of theset vessels to look like egg crates and then went on to explain the peculiar construction of the lake cargo ships and the necessity for open holds unimpeded by bulkheads in order that bulk cargo may be discharged expeditiously. Finally Mr. Coulby opposed any hard and fast rules such as have been suggested for arbitrarily fixing the size of a vessel's crew, explaining, in illustration, that the new vessels of 10,000 tons carrying capacity each, which his company is now building, would actually require less of an engine crew in each instance than some older vessels of 2,500 tons capacity each now in service. Moreover, he did not thing it just that the new and stringent regulations to be provided for passenger steamers should be permitted to apply to the lake ore carriers simply because these latter vessels have accommodations for carrying a few passengers, guests of the management.

Mr. Harvey D. Goulder, of Cleveland, speaking as the representative of the Lake Carriers' Association, controlling vessels aggregating 1,400,000 tons largely engaged in iron ore carrying, spoke along the same general lines as Mr. Coulby. He ventured the opinion that the proposed requirements relative to a record of plate used in repair work would work an unwarranted hardship; took a decided stand against the "donkey" boiler proposal, and argued against bronze or brass valves as not best adapted to fresh water practice.

Supplementary to their remarks at the hearing most of the gentlemen who appeared filed with the Secretary briefs outlining their objections to the proposed regulations and the substitutes suggested. Secretary Metcalf announced his intention to turn over all this documentary evidence to the Board of Supervising Inspectors at its meeting this week and stated that no action would be taken until the entire matter had been thoroughly threshed out.

Features of the Proposed Changes.

The amendments to the general rules and regulations recently recommended by the Board of Supervising Inspectors of Steamboats, which were the subject of the public hearing reported in the above are contained in a pamphlet of 100 pages submitted to the Department of Commerce and Labor. Many of the proposed amendments pertain exclusively to navigation matters but the subject of marine boiler construction occupies fully half the space.

The manufacturer is required by the proposed rules to stamp every iron and steel plate used in boilers for steam vessels. He must stamp each plate in five places, at the corners and at the center, with his name, place of manufacture and the tensile stress to the square inch, which must be at least 45,000 lb. for iron and 50,000 lb. for steel. Plates may be inspected at the mills for repairs to marine boilers, or may be carried in stock, the test record being in duplicate and one report being sent through the supervising inspector to the local inspector where the plate is used, the duplicate going to the boiler maker and then to the purchaser. The latter turns over the report to the local authorities at the first inspection.

The testing of the iron and steel plates, except doubling plates, washers, manhole frames, clip plate braces, crown bars, gusset stays and similar plate braces, is to be handled as follows: All materials must be free from laminations, cracks, scabs and similar imperfections. Four test pieces will be taken from every plate, two for the tensile test from diagonal corners and the other two for the bending test from the remaining corners. The test pieces shall be fully 16 in. long, from 1½ to 3½ in. wide at the ends, the latter joining by an easy fillet a straight part in the center at least 9 in. long and 1 in. wide. A proviso to this amendment requires samples for the testing machines of the steamboat inspection service to have no greater width at the ends than 2 in. Only steel plates made by the basic or acid open-hearth process are acceptable but this, of course, does not apply to plates for the manufacture of Bessemer steel tubes. No plate made by the acid process can contain more than .06 percent phosphorus and .04 percent sulphur. No plate produced by the basic method shall have in excess of .04 percent phosphorus and .04 percent sulphur. These to be determined by the manufac-

turer's analysis, a copy of the test being furnished the inspector for each order. The analysis may, if deemed expedient by the Supervising Inspector General, be verified by an outside test at the expense of the maker of the plate. The steel plate sample must have a tensile strength of 50,000 lb. and not greater than 75,000 lb. per square inch of section. The sample must show an elongation of at least 25 percent in 2 in. for thicknesses up to ¼ in.; in a length of 4 in. for over ¼ up to 7-16 in. and in a length of 6 in. for all plates over 7-16 in. The sample must also show a reduction of sectional area as follows: At least 50 percent for thickness up to ½ in., 45 percent for thickness over ½ and up to ¾ in., and 32.5 percent for thickness over ¾ in.

Quenching and bending test pieces shall be 12 in. long and 1 to 3½ in. wide. The sheared or planed sides must not be rounded but the sharp edges can be taken off with a fine file. The test piece shall be heated to a cherry red and plunged into water at about 82 degrees Fahr. The sample is then bent to a curve having an inner radius not greater than one and one-half times the thickness of the sample, without cracks or flaws. The ends must be parallel after bending.

The iron plate sample must have a tensile strength between 45,000 and 60,000 lb. per square inch of section, and show an elongation of at least 15 percent in a length of 8 in. The specimen shall show reduction of sectional area as follows: For 45,000 lb. tensile strength, 15 percent and for each additional 1,000 lb. tensile strength up to 55,000 lb. add 1 percent. For samples over 55,000 to 60,000 lb. only 25 percent will be required. The bending test pieces shall be 12 in. long and from 1 to 3½ in. wide. The edges shall not be rounded but as in the case of steel specimens the sharpness may be taken off with a fine file. The test pieces shall then bend cold to an angle of 90 degrees to a curve, the inner radius not greater than one and one-half times the thickness of the sample, without cracks or flaws.

Boiler manufacturers shall furnish the inspectors with duplicate blueprints or tracings, one set only being retained. Where more than one boiler is made from a similar design to one on file, a reference to this drawing is all that is required. A written statement of kind of material and size of rivets, the size and longitudinal and diagonal pitch of rivet holes, and distance of edge of plates from center of rivet holes, is required from the boiler maker with the affidavit of the plate test.

Single riveted cylindrical boilers shall not carry a working steam pressure to produce a strain in excess of one-sixth of the tensile strength of the iron or steel plates. Where the longitudinal laps of the cylindrical parts of these boilers are double riveted and the rivet holes have been fairly drilled, an addition of 20 percent to the working pressure provided for single riveting will be allowed. All marine boilers shall have the rivet holes in the shells, heads and flanges, steam and mud drums, and holes for stay bolts and tubes fairly drilled in place and no part of any of these can be punched.

Many rules and formulæ are given for calculation of the various parts of the boiler and the use of cast iron and cast steel is allowed in specified details of the construction, as in manhole and handhole plates, valves, water columns, flanges, saddles, ells, tees, crosses, or manifolds, when these are bolted or riveted directly to the boiler, also casings of slip joints in pipes, provided that the material is of suitable grade and thickness for the pressure.

The Scottdale Furnace of Corrigan, McKinney & Co. was blown in Jan. 18 after an idleness of two months. The stack was raised from 65 to 75 ft. and extensive improvements were made, increasing the output to 275 tons daily.

The directors of the United States Cast Iron Pipe & Foundry Co. have increased the preferred dividend from 1¼ to 1¾ percent, which places the preferred shares on a 7 percent basis.

NEW ENGLAND FOUNDRYMEN'S ASSOCIATION.

The annual meeting of the New England Foundrymen's Association was held at the Exchange Club, Boston, on Wednesday, Jan. 11, at 4 p. m. President B. M. Shaw presided. Applications for membership were received from the Hopson & Chapin Mfg. Co., New London, Conn., and Somerville Iron Foundry, Somerville, Mass., and they were unanimously elected.

Telegrams were received from the president and commissioner of the National Founders' Association regretting it would be impossible for them to attend and sending New Year's greetings to this association.

The committee appointed to secure information relative to the quiz topic brought up at the December meeting, viz.: "What is the best fuel ratio which you have been able to obtain?" reported that after making several inquiries they received the following from Dr. Richard Moldenke: "When I ran a 50-ton heat out of a cupola 54 in. inside diameter, I obtained a fuel ratio of 1 to 10.1 for gray iron castings. The best I ever had was in melting white iron for pots, the heat being about 65 tons, and the melting ratio 1 to 11.8. Recent tests made by me at the St. Louis Model Foundry with cupolas 24 in. inside diameter and 3,000 lb. to the heat, gave good hot iron with Connellsville coke with a ratio of 1 to 7. A better ratio would have given dull iron. Then another test made by me at a large shop making heavy castings of gray iron had a melting ratio of 1 to 10.2. All these figures are regular runs. In general, I would say that for ordinary foundry work, with medium sized heats, a ratio of 1 to 8 is quite a good one, as the few cents spent in getting extra hot and clean iron are a good investment."

The treasurer reported a balance on hand Jan. 2, 1905, and all bills paid. The secretary reported 21 firms added to the rolls during the past year, making a total membership on Jan. 2, 1905, of 115 concerns and three honorary members.

The following is a list of the officers elected to serve for the ensuing year:

President, John Magee, Magee Furnace Co.

Vice president, Walter B. Snow, B. F. Sturtevant Co.

Treasurer, Geo. H. Lincoln, Geo. H. Lincoln & Co.

Secretary, Fred F. Stockwell, Barbour-Stockwell Co.

Executive committee, J. O. Henshaw, N. S. Bartlett & Co.; A. J. Miller, Whitehead Bros. Co.; Harry E. Gibby, Mechanics Foundry Co.; W. C. Doherty, Doherty Bros.; H. A. Carpenter, A. Carpenter & Sons Foundry Co..

President Shaw spoke briefly on the work of the association and then requested Messrs. Carpenter and Geo. Gibby to escort the newly elected president to the chair. Mr. Magee thanked the members in a very pleasing manner for the honor bestowed upon him and also referred to what the association had done and to the field of effort before it in the future. He called upon other newly elected officers for a few remarks.

After a short intermission, during which the delegates from the Philadelphia Foundrymen's Association were received by the members, the meeting adjourned to dinner. Following the last course President Magee introduced Henry A. Carpenter, former president, as toastmaster of the evening and he was greeted with applause that extended for several moments. He extended cordial greetings to the guests from Philadelphia and to the members present.

Prof. Henry D. Metcalf, of Tufts College, was introduced as the speaker of the evening, and made an address on "Welfare Work for the Benefit of Employes," illustrating his remarks by stereopticon views.

President Magee extended cordial greetings to the representatives of the Philadelphia Foundrymen's Association, and after dwelling on the historical events connected with one of the oldest landmarks in Boston, presented them with a

framed picture of Christ Church, Boston, more commonly known as the Old North Church.

The toastmaster called upon Dr. E. E. Brown, of Philadelphia, who responded happily, accepting on behalf of the Philadelphia Foundrymen's Association the beautiful etching and extending thanks for the gift. The toastmaster also called upon a number of other gentlemen whose responses in lighter vein contributed further to the good cheer of the occasion. The members were then entertained by a vaudeville smoker which rounded out an enjoyable and memorable occasion.

Those in Attendance.

Prof. H. C. Metcalf, Tufts College.
Walter B. Snow, B. F. Sturtevant & Co.
C. F. Baker, Boston, Mass.
Fred F. Stockwell, Barbour-Stockwell Co.
E. E. Durant, G. F. Warner Mfg. Co.
Josiah Thompson, J. Thompson & Co., Philadelphia.
John Magee, Magee Furnace Co.
E. E. Brown, E. E. Brown & Co., Philadelphia.
Frank Krug, Jos. Dixon Crucible Co., Philadelphia.
N. H. Reed, Somerville Iron Foundry.
D. G. Moore, Elizabeth, N. J.
H. A. Carpenter, A. Carpenter & Sons Foundry Co.
F. J. Stewart, Jas. Stewart & Co.
E. A. Tutein, Crocker Bros.
Wm. J. Breen, Hugh W. Adams, agent.
W. A. Garratt, Whiting Foundry Equipment Co.
Thos. Aldorn, Jas. M. Towle, Chicago Pneumatic Tool Co.
Henry F. Arnold, Chas. Hitch, Jr., American Tool & Mach. Co.
D. F. Eagan, Pridmore Molding Machine Co.
E. B. Pierce, Wheeler Foundry Co.
E. J. Lyons, Brown & Sharpe Mfg. Co.
Geo. B. Buckingham, Arcade Malleable Iron Co.
W. A. Jackson, Walworth Mfg. Co.
T. P. Kelly, T. P. Kelly & Co.
B. C. Saulpaugh, A. R. Hobart, Victor Metals Co.
S. M. Thompson, R. H. Penny, F. H. Ellis, Barbour-Stockwell Co.
C. H. Converse, McGreenery & Manning.
Wm. H. Stafford, Geo. H. Gibby, Gibby Foundry Co.
L. S. Brown, W. H. Coffin, Springfield Facing Co.
A. W. Gibby, H. E. Gibby, G. H. Carson, Mechanics Foundry Co.
C. A. Reed, J. O. Henshaw, N. S. Bartlett & Co.
C. H. Bird, H. H. Adams, New York.
Robt. C. Bird, Broadway Iron Foundry Co
L. N. Perrault, B. F. Sturtevant & Co.
C. C. Boyden, Matthew Addy & Co
W. M. Saunders, Saunders & Franklin, Chemists.
E. C. Peck, United States Graphite Co.
I. F. Baker, General Electric Co.
A. L. Lovejoy, Becker-Brainard Milling Mach. Co.
F. B. Foster, Geo. H. Lincoln & Co
H. R. Luther, J. P. Winlock, T. C. Wilson, Barbour-Stockwell Co.
G. H. Lincoln, Geo. H. Lincoln & Co.
W. H. Bense, A. W. Chase, Kingsley Iron & Machine Co.
Jas. F. Lanigan, Davis Foundry Co.
H. E. Wetherbee, Jas. Hunter Machine Co.
W. T. Hopson, Hopson & Chapin Mfg. Co.
A. E. Shields, Shields Foundry Co.
M. J. Dyer, Valley Falls Iron Foundry.
W. T. Nicholson, Cutter, Wood & Stevens Co.
G. S. Bullock, Whitehead Bros. Co.
B. M. Shaw, G. H. Whitney, J. R. Egan, R. Blyth, Walker-Pratt Mfg. Co.
J. L. Anthony, C. E. Evans, F. P. Leonard, R. M. Leach, Weir Stove Co.
O. G. Thomas, Taunton, Mass.
R. W. Whitmarsh, O. G. Thomas.
G. A. Locke, A. Herrick, A. O. Smith, Smith & Wallace.
G. H. Gleason, D. S. Seaman, Green Economizer Co.
F. N. Turgeon, Lowell Machine Shops.
O. E. Nutter, Saco & Pettee Machine Shops.
G. O. Sawyer, Hartford Laboratory Co.
J. J. Macdonald, J. W. Winchester, Magee Furnace Co.
W. F. Savage, W. C. Skulley, Smith & Anthony Co.
H. J. Burrough, Builders Iron Foundry.
S. G. H. Fitch, Vaughn Machine Co.
L. H. Miller, Providence Steel Casting Co.
F. A. Wilson, Secretary Boston Labor Bureau.
E. H. Mumford, Tabor Mfg. Co., Philadelphia.
D. L. Moody, F. E. Fitts, Jr., Rogers, Brown & Co.
A. L. Goodnow, L. H. Goodnow Foundry Co.
C. J. Caley, J. Schilling, Russell & Erwin Mfg. Co.
A. N. Abbe, American Hardware Co.
C. A. Earle, Corbin Screw Corporation.
S. E. French, Athol Machine Co.
E. V. Hazard, Old Colony Foundry Co.
R. W. Page, C. L. Peirson & Co.
J. F. Blauvelt, New England Butt Co.

PERSONAL.

C. H. McCullough Jr., second vice president of the Illinois Steel Co., Chicago, has resigned to accept a position with the Lackawanna Steel Co., Buffalo, as assistant to President E. A. S. Clarke. Mr. McCullough will enter upon his new duties Feb. 1.

L. E. Dunham, for a number of years manager of the Ashland Iron & Steel Co., Ashland, Wis., has become connected with the ore department of M. A. Hanna & Co.

Chas. P. Neill, the successor of Carroll D. Wright as United States Commissioner of Labor, has been a professor in the Catholic University at Washington.

E. F. Smith, of the University of Pennsylvania, and John Birkinbine and Edward T. Stotesbury, of Philadelphia, have been appointed by Secretary Shaw on the commission to test and examine the weight and fineness of coins.

The Vandyck-Churchill Co., general machine tool dealer in New York and Philadelphia, has secured the services of W. W. Nichols, who for the past year has been road representative of the Diamond Drill & Machine Co., and, before that, connected with W. E. Shipley, of Philadelphia. Mr. Nichols will travel for the Vandyck-Churchill Co. in Northeastern Pennsylvania.

Alva C. Smith, superintendent of the Cleveland Furnace Co., has resigned to take charge of Riverside blast furnaces of the National Tube Co. at Wheeling, W. Va. The change takes effect Feb. 1.

John A. Nicholson, assistant superintendent of open-hearth No. 1 at the Homestead Steel Works, Homestead, Pa., has been appointed superintendent of the open-hearth department of the Clairton mills of the Carnegie Steel Co. and entered upon his new position Jan. 16. W. P. Lanning, whom Mr. Nicholson succeeds, has been located at Clairton but a few months, having gone there from the Newburg plant of the American Steel & Wire Co., in Cleveland. Mr. Lanning's ill health was the cause of his resignation.

Henry D. Beach, president and general manager of the Pacific Iron Works, has tendered his resigation to take effect Feb. 16. One week later he will again enter the employ of the New York, New Haven & Hartford Railroad Co. in the capacity of signal engineer. Mr. Beach terminated his connection with the railroad in 1903.

E. B. Tenney, formerly superintendent of blast furnaces of the American Steel & Wire Co., Cleveland, has been appointed superintendent of the River furnace of Corrigan, McKinney & Co., Cleveland. Mr. Tenney has been succeeded by Guy Peters, who has been assistant superintendent at Cleveland for several years.

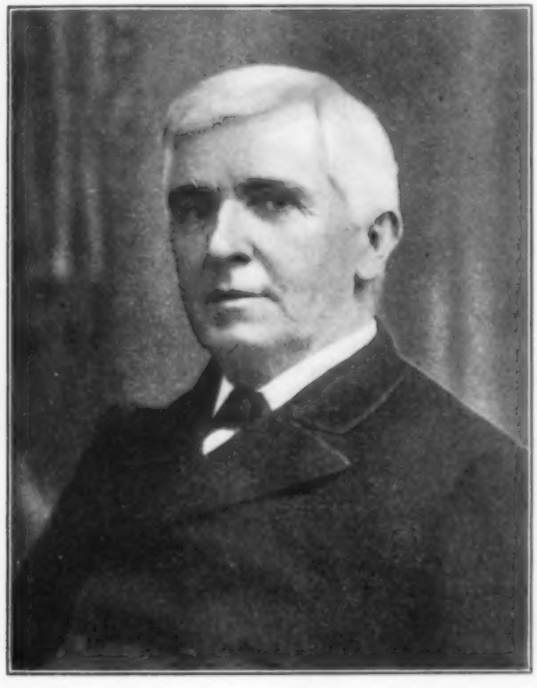
The rock drill and air compressor trade was largely represented at a gathering of associates and friends of Geo. A. Howells at the office of the Rand Drill Co., in New York, on Jan. 5. The occasion marked the 25th consecutive anniversary of Mr. Howells' connection with the company. Although a comparatively young man he is considered the dean of the rock drilling fraternity, having been in the business longer than any other man in the country, and he enjoys the friendship of thousands of contractors, mining men and quarry men. Mr. Howells was presented with a loving cup by the officials of the company.

James A. Cowan, for some time division superintendent of the H. C. Frick Coke Co. in the Morewood district of the Connellsville region, and Clay F. Lynch have been appointed assistants to General Superintendent W. H. Klingerman of the company.

Edwin Crawley has disposed of his interest in the Presslar-Crawley Mfg. Co., Cincinnati. For the last three years with that company, 16 years in the firm of Crawley & Johnston and for many years before that with other machine builders of Cincinnati and other cities, he led a very active life. He retires from active business.

THE LATE CHARLES S. BELL.

Charles S. Bell, of Hillsboro, O., brief mention of whose death on Jan. 3 has been made in these columns, died from an attack of heart disease, superinduced by Bright's disease, from which he had been a sufferer for several months. Mr. Bell was born in Maryland, Feb. 6, 1829, and after attending the public schools until 15 years of age, found employment in a machine shop in Pittsburg, where he learned the trade. He went to Hillsboro in 1858 and started a small foundry. The business gradually increased until the large plant now occupied was built and the C. S. Bell Co. was organized, the other stockholders being members of Mr. Bell's family. This concern, the products of which are farm and church bells and cane mills, is one of the largest of its kind in the United States, and its trade extends to all quarters of the civilized world. Its great success is due largely to Mr. Bell's energy, enterprise and personal management which continued uninterruptedly up to the time of his last illness, excepting for brief periods when he traveled extensively in this country and Europe. Mr. Bell was deeply interested in matters pertaining to the public welfare, had given much time to general reading and was cultured to an unusual extent for one of so limited schooling.



CHAS. S. BELL.

Story of the Iron and Steel Institute Visit.

Under the title "Visits and Excursions at the American Meeting, Oct. 23 to Nov. 12, 1904," the secretary of the Iron and Steel Institute, Bennett H. Brough, has recently issued a pamphlet of 103 pages. It gives with considerable detail the story of the American visit of last fall, including the various social functions, with descriptions of the works visited and information pertaining to American practice in iron and steel. Under the latter head there are reprints of the paper on "A Decade in American Blast Furnace Practice," presented by F. L. Grammer, of Baltimore, at the Atlantic City meeting of the American Institute of Mining Engineers; also the article by B. E. V. Luty in *The Iron Trade Review* of Oct. 27, 1904, entitled "Changes in the American Iron Industry Since the Iron and Steel Institute Meeting of 1890." Mr. Brough writes appreciatively of the work of the general reception committee and of the various local committees, and gives a faithful record of the works trips taken by the visitors, with considerable detail of the operations at the plants seen and their equipment. The distance traveled by the main party, after landing in New York, was 1,322 miles, and that traveled by the St. Louis party was 1,797 miles. The distance was traversed without a mishap and without the loss of a single one of the 417 pieces of baggage belonging to the members. Mr. Brough's pamphlet, which shows no little ability and discrimination in its preparation, will form a part of the Journal of the Iron and Steel Institute for 1904.

Tennessee Coal, Iron & Railroad Co.

The Tennessee Coal, Iron & Railroad Co. has issued a statement of earnings from Jan. 1 to Sept. 30, 1904. The net earnings during this period amounted to $1,191,075. Interest and other charges amounted to $584,171, leaving a balance of $606,904. Out of this sum $211,635 was appropriated for improvements and depreciation and $14,440 went to pay the dividends on the preferred stock. The remaining surplus amounted to $380,829. The general balance sheet of Sept. 30, 1904, is:

Resources:

Land account	$26,084,837
Plant account	10,000,783
Deferred charges to operations	31,894
Investments (proprietary land cost)	292,638
Trustees of sinking funds	52,940
Treasury securities	638,000
Cash	429,430
Bills receivable	207,923
Accounts receivable	1,113,345
Inventory of products and supplies on hand	1,419,836
Total	$40,271,625

Liabilities:

Common stock	$22,552,800
Preferred	248,300
Bonded debt	12,927,000
Guaranteed pf. stock Ala. Steel & Ship Bldg. Co.	440,000
Reserve funds	243,459
Depreciation funds	214,191
Bills payable	825,000
Accrued interest and unpresented coup	215,416
Audited vouchers, pay rolls and current accounts payable	400,469
Profit and loss, 1904	380,829
Surplus prior to 1904	1,734,162
Total	$40,271,625

A machine to thread the heavy bolts which will be used in the new Pennsylvania Railroad tunnel under the North River and which was recently built by the Waterbury Farrel Foundry & Machine Co., of Waterbury, Conn., is probably the most powerful thread rolling machine ever made, as it is capable of rolling a thread 3½ in. long on a 1½-in. bolt. The machine is similar to the regular line of thread rolling machines built by the company. It is double geared from a driving pulley 43 in. in diameter by 7¾ in. face. It is provided with roller bearings to reduce friction, a quick return movement for the slide and an improved knock-off.

At a meeting of parties interested in the affairs of the Diamond State Steel Co., Wilmington, Del., to consider plans for the best interests of the creditors, stockholders and bondholders, a reorganization committee as follows was appointed: H. H. Haines, George W. Todd, Robert Whitaker, David H. Ross and Jacob H. Lewis.

Henry W. Coffin has been appointed receiver of the Eclipse Rolling Mill & Mfg. Co., Birmingham, Ala. The company is a comparatively new concern.

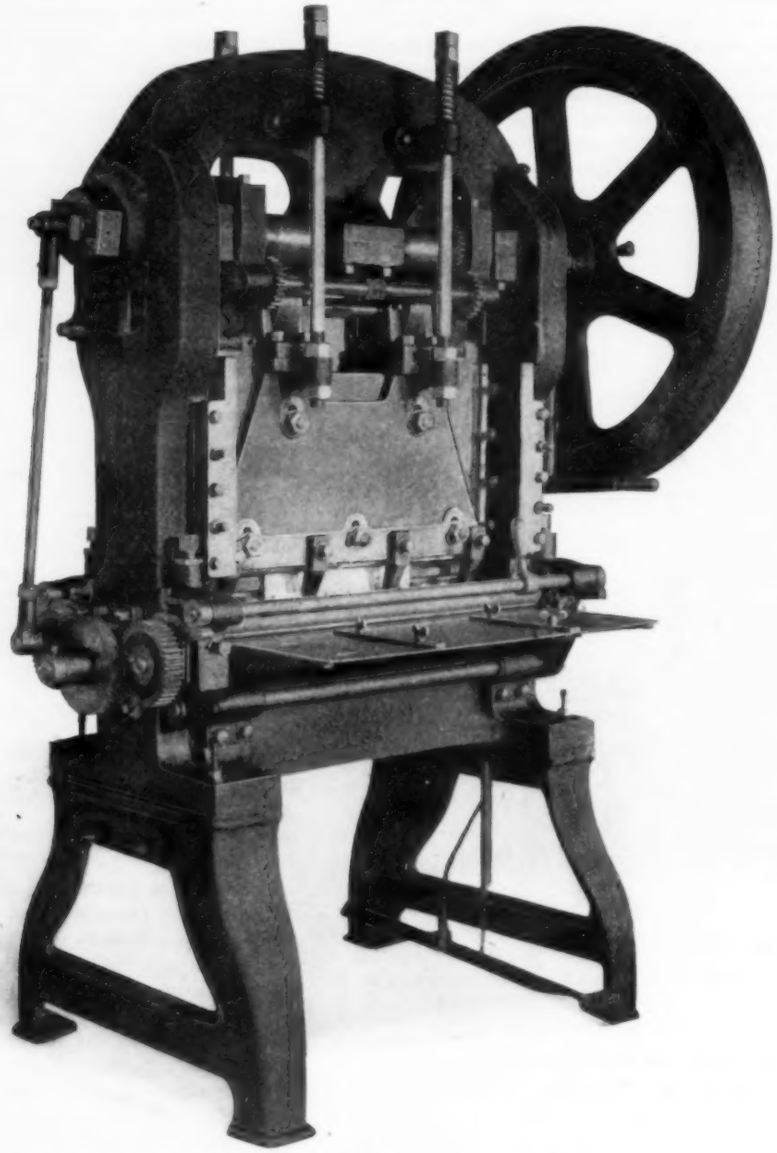
PRESS WITH CAM-ACTUATED STRIPPER.

This press has been designed by the E. W. Bliss Co., of Brooklyn, N. Y., for automatically perforating sheet metal of the lighter gauges. The machine will perforate sheets of metal, of any length up to 28 in. in width, and is provided with adjustable gauges for handling narrow or wide stock, as may be necessary.

An important feature of this machine is the cam-actuated stripper seen in front of the main slide of the press. The operation of this stripper is as follows: The stripper slide first comes down and securely holds the sheet; the main slide then does the punching and recedes, after which stripper slide rises. This permits of using shorter and stockier punches and also prevents the breakage of punches in that the stock is held securely and cannot buckle when the punches withdraw. Buckling is a cause, many times, for the breaking of punches.

The roll feed is very ingeniously devised for readily changing the punches. On loosening four bolts both front and back rolls are dropped down out of the way on the hinge, as shown in the illustration. At each stroke of the press the rolls are automatically released after the stripper has taken hold of the stock and provision is made for raising the rolls by hand when taking off an old sheet and starting a new one. Considerable variation can be made in the feed by means of the adjustable connection on the crankshaft.

The stroke of the main slide is ½ in. and of the stripper ¼ in., permitting a space of 150 to 200 strokes per minute. It is equipped with the Bliss improved clutch, which can be taken out of the shaft without removing the wheel from the press. The clutch may be operated by either the foot treadle or hand lever, as shown. The total weight of the machine is 6,800 lb.



A NEW PRESS.

Winton C. Garrison, chief of the Bureau of Statistics of New Jersey, has issued a report on the conditions of the iron ore industry in that state, which shows considerable improvement. The report covers the years from 1895 through 1903. From 1895 to 1899 general depression existed in the iron-mining districts, the highest product of any of these years being that of 1899, when 192,575 tons of ore were mined. In 1903 there were 415,816 tons of ore mined. From 1895 to and including 1903 there were 2,165,564 tons mined in New Jersey, the selling value of which was $5,140,674, or an average price of $2.37 per tons.

CANADIAN NOTES.

TORONTO, Can., Jan. 16.—The Toronto Pressed Steel Co., Ltd., has been incorporated under the laws of Ontario with $100,000 capital and head office at Toronto Junction. Among the provisional directors are: James R. L. Starr, James H. Spence and Thomas E. Wilson, of Toronto. The company will manufacture railway and contractors' supplies, including wheel and drag scrapers and other implements. A suitable site in Toronto Junction is desired.

N. W. Rowell, a director of the Lake Superior Corporation, reports to the Ontario Government, which guaranteed the company's bonds to the extent of $2,000,000, that the enterprise is in a flourishing condition. The interest on the bonds has been met as it fell due and the claims of the remaining creditors, who a few weeks ago threatened litigation, have now all been met. One blast furnace, with a capacity of 250 tons a day, is turning out pig iron, and a charcoal furnace with a daily capacity of 150 tons will soon go in. This it is hoped will obviate the need for importing pig iron for the steel plant.

The Locomotive & Machine Co., of Montreal, has elected the following directors: A. J. Pitkin, Pliny Fisk, G. R. Sheldon, W. U. Barnum, K. W. Blackwell, J. R. Wilson and D. W. Morrow. Officers were elected as follows: President, A. J. Pitkin; 1st vice president, J. E. Sague; 2d vice president, R. J. Gross; secretary, Leigh Best; treasurer, C. B. Denny; comptroller, C. E. Patterson.

Grand Trunk Railway officials deny the statement which recently obtained extensive circulation that the company had placed large orders for steel rails in England. Negotiations are now pending on the first orders for rails for the transcontinental line, which will probably go to a Canadian mill.

The Dominion appraisers at Ottawa have decided that well-drilling machinery and apparatus such as are made in Canada are dutiable. The department of customs has issued a list of articles which are exempt from the special or anti-dumping duty. It is in part as follows:

Boiler plate, flange plate and fire-box plate, for use only in the manufacture of boilers (conditional on the following declaration being subscribed and attested to by the importer on the face of the entry): "The plates above described are boiler plates, flange plate, or fire-box plates, as the case may be, which have been imported in good faith as such, and will be used only in the manufacture of boilers."

Universal milled rolled edge bridge plates, when imported by manufacturers of bridges for use only in the manufacture of bridges (conditional on declaration being subscribed and attested to accordingly by the importer on the face of the entry).

Rolled edge plate not less than ½ in. thick and over 15 ft. long when imported and to be used only for tires of traction engines (conditional on declaration being subscribed and attested to accordingly by the importer on the face of the entry).

Flat galvanized sheet iron, guns and rifles, not military, twist drills, cabinet locks, padlocks, steel beams, tees, girders for structural purposes, when not punched, drilled or in any further stage of manufacture than as rolled.

Curious Accidents.

The *Monthly Bulletin* of the Fidelity & Casualty Co. records two curious accidents. The first illustrates relative motion and will therefore interest the mechanic. A somewhat similar experience occurred in an elevator shaft in New York last year. The other instance presents a case of undressing by machinery, a surprisingly thorough job being accomplished, fortunately with no serious injury.

A laborer was at work on the roof of a power house, wheeling concrete, taking the barrows from the elevator as they came up to the roof and placing them again on the elevator when empty. A number of barrows of the concrete had been rolled off the elevator and stood on the roof near the shaft. Just at a moment when the elevator had started to descend, a laborer took up the handles of one of the empty barrows and stepped backward with it, as he supposed, on the elevator. Of course, he fell down the shaft. The superintendent saw the accident, and jumped to the shaft to see which would reach the bottom first, the elevator or the man. According to his story, the man caught up with the elevator about 40 feet down, striking his breast across the cross beam, and falling in a sitting position on the platform; in which position he went to the bottom, eighty feet further down. The elevator was descending, when he struck it, with nearly the same speed at which he was falling. The result was that when he arrived at the bottom he was uninjured. He got off the elevator and went about his business, having by this combined means of descent reached a point about one hundred and twenty feet lower than that from which he first stepped into space.

Here is another of a different character. An employee was working at a machine. His clothing was caught by gears. He escaped fatal injury by his clothing giving away. As a matter of fact, he was thoroughly and entirely stripped of everything he had worn except his shoes and stockings. He was not injured beyond receiving some surface scratches.

Robert Anderson Forge Co., Milwaukee, Wis., succeeds G. Obenberger Forge Works Co. The capital has been increased from $5,000 to $10,000. The officers are: R. Anderson, president and manager; J. Ewecker, secretary; Ph. Schwab, treasurer. The company's specialty will be crank shafts, rough turned and blocked. It has additional tools for doing this work in its old plant, and is at present figuring on adding large steam hammers to the equipment. It expects to turn out heavy forgings of all kinds, such as connecting rods, heavy crank shafts, crane hooks and tool steel work. Mr. Anderson has had a large amount of experience in this line, having been boss blacksmith for the Allis-Chalmers Co. nine years, and also nine years boss blacksmith for the Hercules Ice Machine Co.

The annual meeting of the stockholders of the Forsyth Pattern Co., Youngstown, O., resulted in the election of John Stambaugh Jr., Geo. J. Renner, W. H. Rudge, W. H. Parks, W. H. Missimer and Frank D. Runser for directors, who afterwards elected Frank D. Runser, president and general manager; Geo. J. Renner, vice president; John Stambaugh Jr., treasurer; and O. B. Davis, secretary. The company reports business fair, and is prepared for a good year.

The Aultman Co., of Canton, O., and the Arctic Ice Machine Co. have been declared bankrupts in the United States court of Cleveland. J. J. Sullivan, of Cleveland, was appointed receiver for the former company and Ernest A. Pflueger, of Akron, for the latter. The action of the court does not materially change the situation of the companies, as they are already in the hands of receivers, but the step was taken in harmony with the plans of a majority of the creditors.

Andrew Carnegie's donations to communities in Great Britain and the United States have now reached a total of $39,325,240 for 1,290 library buildings. Altogether he has given away $101,488,633 for public purposes. Of the 1,290 libraries given to English-speaking people, 779 are in the United States. New York leads, with 119 Carnegie libraries, costing $6,360,000. Pennsylvania is second with 70 libraries distributed in 30 towns and cities.

The report of the receivers of the New York Locomotive Works, Buffalo, shows that the receivers will obtain $18,000, the liabilities amounting to $150,000.

Physical Characteristics of Certain Bronzes for Steam Uses.*

BY STRICKLAND L. KNEASS.

It is not necessary for the purpose of the present paper to touch upon the history of the bronze alloys, the use of which reaches far back to the dawn of civilization. A vast amount of research has already been given to the subject and the early methods employed in their production have been entirely superseded, so that even an accurate description would have but little practical value to the modern metallurgist or manufacturer.

The copper-tin alloys in general use vary from 5 to 24 parts by weight of copper to 1 of tin, with a small percentage of either zinc or lead or of both elements. The true binary has a comparatively small part to play in the arts and trades compared with the total amount of bronze in use, because the cost and difficulty of tooling and machining is much greater, and lead, zinc, nickel, phosphorus or aluminum are almost always introduced, producing a beneficial effect upon the physical characteristics. For example, a trace of zinc is used in a 5 to 1 mixture for certain kinds of spindle-bearings or sleeve nuts, producing a metal hard and brittle, having a whitish-gray fracture, machining with a short chip which flies from the tool with great force; care is required to obtain a good smooth surface, but when obtained the bearing wears well under heavy pressures. A ratio of 7 of copper to 1 of tin, and a little more zinc, makes a good hydraulic bronze, with sufficiently high tensile strength for all ordinary purposes, machining well and running solid in the mold, even with large size sections.

Commencing with pure tin and passing through the various proportions of copper until the latter metal is reached, the appearance of the fracture changes from white, through gray, ash-gray, bluish-red, reddish-yellow to the tile-red of pure copper. The melting point changes at the same time with each increment of copper, until that of the latter metal is reached. According to Mallet, the maximum density of the alloy is somewhat above that of copper, and occurs when the proportions by weight are about 3 of copper to 1 of tin.

The chemical union of copper and tin in more than one or two proportions is disputed by many authorities, although the statement has been made before this institution, that 1 to 1, 1 to 2, 1 to 3 and 1 to 4 are probably alloys. Be this as it may, in the actual behavior of the binary alloy in the foundry, owing to imperfect mixing or to other reasons, there is almost always found a certain amount of liquation and a proportion of eutectic alloy which affect the physical characteristics.

This subsidiary alloy is much more in evidence, and its presence and amount of greater importance in the quaternary alloys or mixtures of copper, tin, lead and zinc, with which we have to deal in this discussion. Here there is always liquation, depending upon the form and size of the section and the rapidity of cooling. For this reason, great care is required to obtain a perfectly homogeneous mixture, approaching as nearly as possible a chemical alloy, free from microscopic pin holes due to shrinkage or to occluded gases, and without the harder spots or lumps of eutectic alloy of the constituent metals. This is where the skill and care of the foundryman, designer and molder, as well as the composition of the metal, play an important part. The rapidity of melting, temperature of pouring and the condition of the mold itself, all affect the results.

The essential characteristics of a good steam metal are, homogeneity, solidity, tensile strength, rigidity, facility for machining, fluidity in casting, and non-corrosiveness, all being supplied by the various mixtures of bronze in use in varying degrees of excellence. With reference to the composition it may be said in general that homogeneity depends upon the causes already cited; tensile strength and rigidity upon the proportion of copper to tin and their preponderance over the lead and zinc, while the form and character of the chip is determined chiefly by the percentage of lead and fluidity by the zinc. The proper mixture for any desired purpose must, therefore, be a compromise, with a fixed tendency toward homogeneity and density, and it is not an easy matter to obtain the desired results in foundry work without careful attention to detail and consistent experiment. And experimental work should not be limited to the examination of etched sections, nor should conclusions be drawn from one set of castings. Specific gravity tests and microscopic examinations are also necessary to cover the field satisfactorily, and are of as much importance in the examination of the physical properties of bronze steam metals, as of iron or steel, and such tests should be repeated at periodic intervals to determine the regularity of product of the foundry.

Bronze castings, both finished and unfinished, are subjected in service to two serious deteriorating agencies, namely, the attrition and the solvent action of the contained fluids. These effects are scarcely noticeable on the rough casting, surfaced as received from the mold or after subjection to the sand blast or cleaning bath, but finished surfaces are often seriously affected. The same result that is obtained in the laboratory by etching polished sections, occurs in practice on an exposed valve or seat, except that the final result is not so satisfactory; the more soluble metals or alloys are dissolved by the acidulous or alkaline solution, leaving the more resisting and harder eutectic alloy to protrude above the surfaces, preventing continuous contact between the valve faces. Further, the high velocity of the fluid passing through a throttled valve, cuts out the softer parts and a bad leak and defective seat soon result.

The porosity of the casting deserves serious consideration, even though the openings be not visible to the naked eye. These defects are seldom observed with a high-power microscope, with the vertical illumination usually employed. The degree of porosity generally depends upon the size of the casting and the part of the section chosen for examination, and is a function of the rapidity with which the molten metal is cooled.

Referring to the effect of attrition in special cases, it may be said that when an injector for feeding boilers is operated at its minimum capacity, the velocity of the jet of water and partly condensed steam may reach 800 ft. per second, with a side pressure against the walls of the tube of from 80 to 100 pounds per square inch. If to the passing fluid be added a percentage of sand or dirt often contained in the water supply, the abrasive effect is rapid. A steam line carrying 200 pounds pressure gives a maximum velocity of discharge through a throttled valve of 1,400 ft. per second. Hydraulic valves made of bronze are frequently subjected to a pressure of 4,000 pounds per square inch, and the velocity of the water or oil through the constricted orifice between the supply and exhaust may reach 2,400 ft. per second during the opening or closing of the valve. The abrasive effect in the cases cited is therefore obvious, and any defect in the surface of the metals exposed to such action is sure to cause rapid deterioration in the operation and efficiency of the device. In injectors made of defective material, the tubes wear out rapidly, not only losing their correct proportions, but, owing to the peculiar action of the jet of steam in apparatus of this kind, grooves and depressions are cut in the inner walls, which cause a richochetting action from one side of the tube to the other, and which finally prevents the jet from passing into the boiler. The harder protruding spots of the eutectic remain unaffected, while the softer parts directly behind them and exposed to the abrasive action of the fluids, are cut below

*From a paper read before the Franklin Institute. Mr. Kneass is superintendent of the Injector Department of Wm. Sellers & Co., of Philadelphia.

the normal surface. In the steam nozzle of an injector, this effect is more marked when a large percentage of water is carried, while dry steam does but little harm to a well designed nozzle, made of good bronze of even density.

As strength and rigidity are largely questions of the proportions of parts in the design, it is my intention to lay special stress upon homogeneity and density.

Without giving the full details of the investigations, it may be of interest to suggest an outline of the experiments to determine the effect of foundry practice upon the density and homogeneity of certain bronzes. A number of tests were made of various mixtures of copper, tin, lead and zinc having a specific gravity of from 8.5 to 8.9, and an ultimate tensile strength from 25,000 to 30,000 lb. per sq. in. The test pieces were turned to ⅝-in. diameter and 6 in. long, while the specimens for microscopic examination were flat discs about ⅛-in. thick and 1½-in. diameter and short cylinders about ¾ x ⅝ in. The test pieces were strained to breakage, and the specimen sections etched and examined microscopically for distribution of liquation, or surfaced for determination of porosity, while the densities of both sets were obtained. It was found that great care was necessary in preparing specimens for examination under the microscope for porosity; a sharp tool and a fine feed must be used to avoid the burnishing effect of a facing tool, as the latter closes up the pores to a great extent; it is also necessary to use a high cutting speed to prevent the tearing of the metal.

One of the most obvious causes of variation of the quality of steam bronzes is careless mixing of the fluid metal before pouring, yet it is seldom that this is thoroughly done. The great difference in the specific gravities causes the lead to preponderate at the bottom. An extreme case of this kind was proved by specimens, taken from similar castings, poured from the top and bottom of a bail pot without special stirring; only a trace of lead was found in the first specimen, and the chips curled like steel turnings; the casting from the bottom of the pot contained three times the required amount of lead, was of a dull color and unfit for use.

A careful determination was afterward made of results that might be expected under best conditions; four small cylindrical test pieces of dimensions already given were taken from the first and last mold poured:

First Mold.

Specimen No. 1, specific gravity	8.539
Specimen No. 2, specific gravity	8.529
Specimen No. 3, specific gravity	8.555
Specimen No. 4, specific gravity	8.530
Average specific gravity	8.553

Last Mold.

Specimen No. 1, specific gravity	8.309
Specimen No. 2, specific gravity	8.368
Specimen No. 3, specific gravity	8.320
Specimen No. 4, specific gravity	8.339
Average specific gravity	8.340

The individual tests are given to show their consistency and the regularity of the composition of the metal; the difference in specific gravity of the two groups is 2.8 percent, and the castings made first are slightly denser. Four flat discs from the first mold had an average specific gravity of 8.267 and from the last mold 8.010, a variation of 3 percent in the same direction. Two more tests of this kind were made, the differences in the specific gravity of each corresponding closely to the table above, the increase in density in the castings from the first part of the heat being respectively 2.9 and 3.4 percent. The conclusion to be drawn is that there is no difficulty in obtainng castings of uniform density if the metal is properly mixed. The slight increase in those first poured is probably owing to the lower temperature of pouring, due to exposure during preparation and skimming, and consequent more rapid setting in the mold.

The effect of rapid cooling is well known, and is used successfully with almost every metal or alloy. In the proper production of the steam bronzes it is of great importance and produces a marked effect, increasing the density, reducing the porosity and rendering the etched section much more uniform, causing a great reduction in the amount of liquation and the number of projecting points of the eutectic alloy. Two groups of test pieces were obtained and tested with the following results:

Short Cylinders.

Average specific gravity of specimens poured hot	8.661
Average specific gravity of specimens poured cold	8.915

Flat Discs.

Average specific gravity specimens poured hot	8.595
Average specific gravity specimens poured cold	8.598

showing a 3 percent gain as before for the short cylinders of small diameter, and practically no change for the larger sections. To determine the effect of maximum practical rapidity of cooling, a small casting was made in an iron mold, and compared with sand contact.

Specific gravity of casting poured in iron mold	9.285
Specific gravity of casting poured in sand	8.610

Increase due to rapid cooling, 7.2 percent.

The appearance of the fracture was different; the grain was closer and the tensile strength was higher. Under the microscope the difference was apparent, there being much less liquation, without visible porosity and with great reduction in the number of projecting points of the eutectic.

Unless excessive internal pressures are used, high ultimate tensile strength is seldom needed, as it is customary to increase the section rather than sacrifice other qualities. When the strength is increased by the addition of aluminum or phosphorus, the expense of remelting the enlarged gates and risers becomes an important item, and there is additional risk of porosity in castings of variable section. Rigidity of form, on the other hand, is of great practical value, so that under strain the castings may not lose their original form or alignment. For all ordinary commercial uses of the steam bronzes, an ultimate tensile strength of from 27,000 to 30,000 lb. per sq. in. is sufficient, and to obtain this value as well as both homogeneity and solidity, careful and conscientious treatment in the foundry is required.

As has been shown, the characteristics of any one mixture of metals producing a steam bronze, vary with the conditions under which the castings are made. Authorities recognize this fact and give a maximum and minimum value of the specific gravity, because no absolute value can be taken. The location of the casting in the mold, the size of the section, the contiguity of large and small masses, as well as the conditions already referred to, affect the density and the homogeneity. In my investigations, the specific gravities have been determined by Prof. A. E. Outerbridge Jr., a statement which is a sufficient guarantee of accuracy. Many were repeated several times, and test pieces cut in halves, to ascertain if there might be any variation shown by smaller sections. The results may, therefore, be accepted as relatively correct and exact as applied to the specimens submitted. The investigations of these steam bronzes also include the position and location of the pattern in the mold and the methods of gating; where a large and small section are contiguous, it is advantageous to place the heavy part of the pattern, having the larger volume in proportion to surface, in a position where it shall be filled by the first poured and cooler metal; it has been found better in certain cases to place the heavier part above and then gate from the lower end of the smaller section. As the larger part is filled with metal at a lower temperature, it cools in about the same time or slightly in advance of the metal in the smaller section, producing a dense casting, free from shrink holes. In conclusion, it may be said that in many important lines in which the steam or allied bronzes are in use, there are deteriorating agencies at work,

acting both mechanically and chemically upon the exposed and vitally important surfaces, which in time destroy the usefulness of the device; the power of the metal to oppose these forces depends chiefly upon the homogeneity and density, and upon these depends the durability of the apparatus. Finally, these saving qualities can be obtained only by the use of the microscope and the testing machine and retained by careful attention to every detail in the foundry.

DISCUSSION.

G. H. Clamer.—Mr. Kneass has brought out some very interesting facts relative to alloys which may be used for steam purposes, and their manipulation in the foundry, but he failed to make mention of one very important factor, which will produce a metal sufficiently dense to withstand the high pressures which such an alloy is called upon to resist. I refer to the admixture to such an alloy of a small quantity of lead. It has long been known by foundrymen that a mixture of a small quantity of lead will produce this effect, and, further, it facilitates the machining of castings which contain it. I know of a very interesting experience bearing on this subject, viz.: In the time of the old bronze cannons, which were made from an alloy (known as "cannon bronze") of copper and tin, a certain founder had taken a Government contract for the manufacture of quite a number of guns of this character. According to the specifications, the Government inspectors were required to weigh the charges, see that they were charged in the furnaces and then the foundryman was held responsible for the castings. These guns were subjected to certain pressure, and, after repeated failures, the manufacturers, being familiar with the value of lead in the alloy, decided to have some molds made of the exact shape in which pure tin was marketed. One night they melted the tin which they had on hand, and added a certain small percentage of lead, then poured it into molds, and when the inspector came the next day he weighed the pigs, which he had no reason to suspect were anything else but pure tin. The mixture was then made up in the usual way, and to the utter surprise of the Government officials the castings from that day all came up to the full requirements.

There has been another point mentioned by Mr. Kneass, viz., the difficulties which are sometimes encountered, due to the presence of the eutectic. What is now known by the name of "eutectic" to the old founders was known as "tin spots," and it was with the idea of removing these that the old bell foundries tried various expedients, notably the addition of metallic silver, etc. In our daily production of alloys containing copper and tin, the presence of the eutectic can be observed. In casting ingots of phosphor-bronze, which contain 80 percent copper, 10 percent tin and 10 percent lead, its presence is very often manifested by the appearance of globules on top of the ingots. These, when subjected to analysis, are found to contain approximately 22 percent tin, 2 percent lead, 74 percent copper and perhaps 2 percent to 3 percent phosphorus. This quite likely is a complicated quadruple eutectic. It demonstrates that phosphorus in phosphor-bronze is contained almost entirely in the eutectic part of the alloy, and it is due to this that phosphor-bronze is so materially harder than alloys of the same composition which do not contain it.

Prof. A. E. Outerbridge Jr.—There is one explanatory statement in Mr. Kneass' excellent paper to which I wish to offer a slight modification. He attributes the greatly increased density and finer texture of test samples of bronze cast in an iron mold, as compared with similar samples of the same bronze metal cast in a sand mold, entirely to the more rapid cooling of the metal when cast in the iron mold. I have made very many experiments in this direction, covering a period of sixteen years or more, and the result is that I attribute the phenomenon mainly to what I call "fluid compression." You may ask what do I mean by fluid compression in this connection? I mean simply this: Certain alloys of metals expand with enormous force at the moment of cooling. It is due to this fact that we are enabled to obtain sharp castings. Pure copper, pure silver, pure gold, etc., do not give sharp castings, because they do not expand greatly at the moment of cooling. When such an alloy as that referred to by Mr. Kneass is cast in a sand mold, it first fills the mold, and then when pouring has ceased it suddenly expands and forces the yielding grains of sand outwards in all directions, making a larger cavity than before. A skin of cooled metal forms immediately; then contraction of the mass begins to take place, the thick sections cool more slowly than the thin sections, giving rise to "segregation" and to spongy spots or porous places, while the whole texture of the congealed metal is of coarser grain than it would have been if it had been subjected to mechanical pressure when in a plastic state. When this alloy is cast in a metal mold the expansion at the moment of cooling takes place as before, but encounters the rigid walls of the mold, and, therefore, fluid compression of the molecules of the metal itself takes place. The internal pressure is frequently sufficient to cause the fluid portion of the metal to burst through the "skin," formed on the upper surface of an open metal mold, where the casting has congealed by exposure to the air, forming pimples of eutectic alloy, and in some cases long filaments curling over in horn-like shapes are extruded. On cutting a section, through an ingot or casting made in a metal mold, then polishing and etching, it will always be found much denser, more uniform in texture, and much more free from segregation, than the same metal cast in a sand mold, while the specific gravity is also considerably higher. Such metal is not necessarily harder than when cast in sand, though the "chips" are quite different in appearance. It may be likened to the difference in density and fineness of grain observed in a piece of pine wood that has been squeezed in a powerful hydraulic press, as compared with a piece of the same wood not compressed. Metallic alloys which have been subjected to this fluid compression show greatly increased tensile strength. These are facts not generally understood, all having important practical application in the metallurgical arts.

S. L. Kneass.—The chief advantage of the use of lead in steam bronzes is to reduce the length of the chip and the cost of machining, as stated in the paper; the percentage should be small, not exceeding 3 percent. There is no doubt but that its presence adds somewhat to the solidity, but when a small amount of zinc is also present the function of the lead is to reduce the cost of finishing the castings. The Bureau of Supplies and Accounts of the Navy Department of the United States limits the lead in steam bronzes to 1 percent, while the Bureau of Steam Engineering omits it entirely.

Referring to the experiments where castings were made in an iron mold, there is no doubt that fluid compression plays some part, but considerable investigation would be required to determine the extent. The theory suggested by Mr. Outerbridge is interesting, and may account for the unusually high tensity of this group of test pieces.

The annual meeting of the stockholders of the Nittany Iron Co., Bellefonte, Pa., was held Jan. 9. The stockholders re-elected the old board of directors, consisting of Messrs. A. A. Fowler and Philip Kleeberg, of New York; F. H. Clemson, of Scotia, and L. T. Munson and N. H. Swayne II., of Bellefonte. The directors re-elected Noah H. Swayne as president and W. W. Waddle as secretary and treasurer. The company's furnace, under Superintendent Geo. S. Grimm, surpassed itself in December by making 3,985 tons, which is 804 tons more than the best month before the present management. The output for the last quarter of 1904 was 2,813 tons above the best previous record for the same period.

TRADE PUBLICATIONS.

An advance copy of the 1905 edition of the compressor catalogue No. 35 comes from the Ingersoll-Sergeant Drill Co., of New York. There are included advance sheets of catalogue 36 and information additional to that appearing in the first edition of No. 35. There are new views of several important installations, including those of the Cleveland Stone Co. and the Mare Island Navy Yard. Air receivers, inter- and after-coolers are given attention. The complete catalogue will appear later in the year. Catalogue 52 is also at hand and is devoted to coal mining machinery. It starts with a quotation from Prof. Jevons, emphasizing the value of coal to commercial and manufacturing industries, and submits figures to illustrate coal mining expansion. It would appear that the number of mining machines in use in the United States grew tenfold from 1891 to 1902, the exact figures being 545 and 5,418 respectively. The catalogue not only gives a good account of modern coal mining conditions and mechanism but touches upon sundry features of quite general interest. For example it presents a few facts for the conservative coal operator too firmly attached to the store system. It would seem that there has been a theory that the machines reduced the profit from the trading stores and miners' houses. This is quite in line with the objection of the workman against the labor reduction of machines generally, and the double-headed presentation of the argument against both these theories is suggestively useful reading.

Charles Babbage and his circulating machines are too important for a single issue of the short-story series prepared by Dwight Goddard for Wyman & Gordon of Worcester, Mass., and Cleveland. The account of the tribulations of the mathematician, his patient scrutiny and record of scientific tables, and his efforts as author, teacher and inventor is most readable. Mr. Goddard is of opinion that the construction of machine tools was certainly enriched by the necessities involved in the construction of the Babbage calculating machine. The useful mathematical tables found in every pocket book intended for mechanics, which are as Mr. Goddard asserts employed with but little appreciation of the labor and expense involved in their preparation, receive attention. A description of the extremely careful method followed by the calculators and the similar efforts of Babbage in a like work are properly made a part of an excellent paper on the patient industry of a pioneer investigator.

A handsomely printed circular from Alfred H. Schütte of 26 Cortlandt st., New York, says that the branch houses carried on by Mr. Schütte under the name of Schuchardt & Schütte will be conducted under his own name. These include the show rooms and offices at Cologne, Germany, and the branches at Brussels, Liége, Paris, Milan and Bilbao. This alteration of the firm does not affect the friendly relations and long contract of Messrs. Schuchardt & Schütte, Berlin. The contract divides the business; Holland, Belgium, France, Spain, Switzerland and Italy becoming the territory of Mr. Schütte.

A few recent and prominent purchasers of Fleming engines from the Harrisburg Foundry & Machine Co., of Harrisburg, Pa., are given place in a circular just to hand. A description of the engine comes on a separate sheet and the two present directly and by inference suggestive data to prospective buyers of power plant equipment.

The Raymond Mfg. Co. Ltd., of Corry, Pa., has a catalogue of wire springs. The company makes machinery springs of any size, length, shape or strength, from ½ in. round and ⅜ in. square stock and smaller of steel, brass, or phosphor bronze, with either japanned, nickeled, coppered or plain finish. There are springs of widely different shapes illustrated and some useful notes on spring design add keeping qualities to a neat pamphlet.

Some circulars from the Patterson Tool & Supply Co., of Dayton, O., are bound togther in a stapled cover. This printing method, a series of subjects separately treated and bound collectively by simple process, is again finding favor. The single circular can be sent out where no other tool may stand a show of sale and in other cases two or more may be bound together and distributed to the prospective purchaser. The present series includes a 13½ in. x 6 ft. engine lathe, power hammer, drill press, bunch drill, power hack saw, drilling machine vises, emery grinders, belt polishing machines, center grinders and boring tool holders. Some of these machines have been illustrated in *The Iron Trade Review.*

The finished steel specialties, machine keys, machine rack, elevator guides, shaft couplings, etc., of the Standard Gauge Steel Co. of Beaver Falls, Pa., are admirably shown in the latest catalogue and price list. The company makes lead screws, worms, etc., the range of sizes including everything from ½ to 2 in. diameter of any required length and from 2 to 6 in. diameter up to 6 ft. 8 in. long. The compression couplings have but few parts and no bolts, setscrews or other projections liable to caten belts or clothing.

The Webster feed water heater and chemical purifier manufactured by Warren, Webster & Co., of Camden, N. J., is discussed in a small pamphlet. An illustration is given of a 2,000 h. p. heater and purifier of this make and a number of strong reasons for water treatment are submitted.

The Harris Air Pump Co., of Indianapolis, Ind., has a pamphlet on air lifts under the W. B. Harris system. Air under pressure is delivered to the side of the pump proper and a discharge pipe leads from the center to the surface. A number of pumping records are emphatic testimony to the working capabilities of this device.

The Marinette Gas Engine Co., manufacturer of the Walrath gas and gasoline engines, Chicago Heights, Ill., sends some circulars and a catalogue of its product. The pumping outfits are built from 2 to 300 h. p., either belted or direct connected to centrifugal, single or double acting power pumps, duplex or triplex pumps. The belted type of engine for lighting plants is furnished from 2 to 300 h. p. and the direct connected type from 8 to 300 h. p. These are sold with generator. The engines are illustrated and described with much minuteness and attention to points of practical value.

The plumbers' hand book from the Pierce, Butler & Pierce Mfg. Co. of Syracuse, N. Y., contains in compact form illustrated description and prices of sanitary specialties. A larger catalogue, 7½ x 10½ in., has excellent engravings of boilers and radiators. There are many sectional views in halftone of house and office heating equipment. A third catalogue deals more specifically with the heating apparatus and sanitary plumbing suitable for the home.

A folder from the J. B. Ford Co. of Wyandotte, Mich., describes a cleaner for use in nickel plating. The black spots on white nickel are due to the caustic soda or potash bath following the buffing. The bath removes the polishing powder and if too strong the specks are formed and need treatment with a cyanide solution or renickeling. The cleaner is to take the place of the caustic bath and has been put to use by the Michigan Stove Co. and others.

The greeting of the Northwestern Malleable Iron Co. of Milwaukee, Wis., is a tasteful piece of printing from the charming figure on the first of the few pages to the starry initial at the close. A halftone of the extensive works backs up the statement that the shop area is 10½ acres, six separate foundries and one hundred tons daily capacity.

A circular of the universal cutter and tool grinder, manufactured by the Oesterlein Machine Co. of Cincinnati, exhibits anew a machine which has been illustrated in *The Iron Trade Review.* This No. 2 grinder has a remarkable facility within its range and the builders have wisely illus-

trated many of the operations practicable on the tool. These show the grinding of a gear cutter mounted on swivel head, grinding periphery of an inserted tooth milling cutter, grinding end mill with taper shank held in swivel vise, grinding saw mounted on swivel head, grinding face of a shoulder and how the makers grind formed cutters, hobs, etc. There are two views illustrative of the operation of grinding side milling cutters without taking the cutter from the arbor.

The "Rheocrat" is a controller brought out by the American Electric & Controller Co. of New York. Some account of the capacity and purpose of this device was given in the report of the last meeting of the National Machine Tool Builders' Association as printed in *The Iron Trade Review*. The circular now received bears out the previous statement and presents further details of the contrivance.

The Cleveland Wire Spring Co., of Cleveland, has a small folder enumerating oil tight lathe pans, annealing pans, steel boxes and barrels, factory waste and rubbish cans of sundry sizes.

Bulletin 56 of the General Pneumatic Tool Co., Montour Falls, N. Y., treats of electric hoists. These possess a number of special features not readily condensed into a brief paragraph. The electrical and mechanical details are of novel character.

The printed matter sent by the Manufacturers' Appraisal Co., of Chicago, shows the benefits to be derived from an appraisement of plant. A complete record includes plans of buildings, map of pipe lines and tracks, hydrants, street and property lines, floor plans of all power driven machinery, shafting, belting and partitions. The appraisement includes lists of structures and their construction, equipment, etc., in the necessary detail requisite for the purpose of the work. The two general statements can show the total cost of plant reproduction, depreciation and present values and the insurable values after deduction of depreciation and uninsurable and indestructible portions. A copy is retained by the investigating company subject to clients' order and copies are of course given at finish of work. Many very extensive plants have been itemized and valued in this painstaking fashion and with much more research than can possibly be here indicated. The growth of such a business in the last few years is a suggestive commentary upon the advancement of modern methods of plant inventory.

A new portable or, more correctly speaking, an automobile drilling outfit, is described in a circular of the Keystone Driller Co., of Beaver Falls, Pa. This is employed for making large and deep blast holes when pulverizing material ahead of steam shovels and is also used for exploration purposes. These machines are made in several sizes and move about under their own steam. The derrick requires no guys or bracing and the entire arrangement is self-contained.

Cramp Steel Co. Reorganized.

It is officially announced that the reorganization plan of the Cramp Steel Co. has been practically completed. By the plan the company's plant at Collingwood, Ont., has been turned over to the Northern Iron & Steel Co., Ltd., which has $1,250,000 each of 6 percent preferred and of common stock. The preferred stock has been offered to the shareholders of the old company on an assessment basis of $15 a share, the stock to be pooled for a year and a half from Jan. 1, 1905. Major Currie, of Toronto, president of the Cramp company, is president of the new company, and the other directors are: G. L. Rice, manager of the International Harvester Co., of Hamilton (which is expected to take at least one-third of the total output of the reorganized company); Prof. J. H. Stevenson, of Nashville, Tenn.; F. A. Hall and D. McDonald, of Toronto. President Currie says the plant will be placed in operation as soon as working capital can be provided. The company is entitled to a $60,000 bonus from Collingwood, which will be paid in forty days after the plant has been placed in operation. This will wipe out the floating debt of the company. The output of the plant will include small angles, flats, machinery steel, agricultural implement steel, small bridge work, mine rails, fish plates, bolt material, tie plates. To the original company the town of Collinwood gave 50 acres of land on the water front. There were built two 20-ton open-hearth steel furnaces, rolling mills and a machine shop.

Bauxite for Furnace and Cupola Linings.

There is now being placed on the market a material for blast furnace and cupola linings manufactured from bauxite ore found in Arkansas. Bauxite has a number of properties that make it a good refractory for furnace lining. It is extremely basic, containing 90 percent of alumina and very small quantities of silica and iron. The shrinkage and expansion of the manufactured material is practically nothing, even under the highest temperatures. It is stated that it will stand well the abrasive action of the descending charge, becoming harder the longer it is exposed to slags at high temperature. This material is also well adapted for lining heating and puddling furnaces. Bauxite brick and shape tile are being manufactured in St. Louis by the Laclede Fire Brick Mfg. Co., under patents issued to Walter F. R. Berger, Little Rock, Ark.

High Speed Steel Patent.

A patent assigned by the inventor, John A. Mathews, of Syracuse, N. Y., to the Crucible Steel Co. of America, is for the manufacture of a high-speed tool steel containing not less than .10 percent of vanadium. The main claim specifies a steel with less than 1 percent of carbon, more than 6 percent of molybdenum and from .10 to 1 percent of vanadium.

The Filer & Stowell Co., Milwaukee, Wis., has presented to the city officials of Milwaukee a bill for $1,000 to cover the expenses of the company incurred in litigation instituted by it to show that the eight-hour clause of the Milwaukee ordinance relating to contracts is unconstitutional. The company, in a lengthy statement on the litigation growing out of the granting by the city of a contract for a new pumping engine to be built under the eight-hour system, states that on account of the injunction proceedings brought by the Filer & Stowell Co. the city was saved $15,500, the contract for the pumping engine having been awarded at much less than it would have cost if the original plan had been carried out. The presentation of this claim and the discussions which have resulted from bringing suit have shown how expensive it is to attempt to prevent free competition in public contracts.

In a complaint filed with the Interstate Commerce Commission the McClintic-Marshall Construction Co., of Pittsburg, charges that the rate of the Missouri Pacific and the St. Louis, Iron Mountain & Southern Railway companies for carrying structural steel shipments of 37 cents per 100 pounds on carload shipments and 64 cents per 100 pounds on the less than carload shipments from East St. Louis to Hot Springs are unjust and unreasonable, and subject the complainant, the traffic in structural steel and the shippers of that material to unjust discrimination and disadvantage. The complainants ask reparation for alleged excess charges.

The Pope Mfg. Co., successor to the American Bicycle Co., has issued its annual report for the year ending July 31, 1904, showing the following: Gross receipts, $7,226,589; manufacturing cost, $5,995,793; net, $1,230,796; other income, $62,158; total income, $1,292,954; general expenses and interest, $1,241,961; surplus, $50,993.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

C. H. Halcomb, formerly president of the Crucible Steel Co. of America, and associates, have incorporated the Halcomb Steel Co., Syracuse, N. Y., with a capital of $400,000. Among those interested in the company are President Frederick R. Hazard, of the Solvay Process Co.; President Lyman C. Smith, of the L. C. Smith & Bros. Typewriter Co.; F. B. Scott and H. S. Wilkinson. The entire amount of stock has been subscribed. For nearly 20 years Mr. Halcomb was at the head of Sanderson Bros.' Steel Works, Syracuse, and when the Crucible Steel Co. was organized four years ago, he was made its president. He retired from the management of this company about two years ago. It is expected that the erection of a plant by the new company will be begun at an early date.

Fort Wayne, Ind., is to have a new plant for the manufacture of plow points. Daniel F. Shordan, an agricultural implement manufacturer of Fort Wayne, has secured patents on what is known as the Keith plow point and has interested with him John M. Landenberger, who will be president of the new company; John G. Peters, Otto Peters, Clarence Swan and others. The company will be known as the Central Foundry & Plow Point Co. and will either purchase a plant outright or build a new one.

The Belmont Iron Works, Philadelphia, has placed orders within a few days for a part of the machinery required at its new plant at Eddystone, Pa.

Walter H. Storm & Co., New York, have been incorporated with a capital of $50,000. The company will manufacture iron castings. Incorporators are: W. H. Storm, Maywood, N. J.; C. O'Connor, Flushing; and W. M. Sullivan, Brooklyn.

Tiffin, O., is to have a new industry. The Sterling Emery Wheel Mfg. Co. has been incorporated with a capital of $100,000. Incorporators are: Robert Miller, George E. Schroth, George T. Tillotson, N. Schreiner and T. A. Miller.

A charter has been granted to the Koplin Iron Co., Atlanta, Ga.; capital, $10,000. Incorporators are: K. Koplin, S. M. Samuels and W. D. Ellis Jr. The company will buy, sell and manufacture iron, steel and other metals, and asks the right to increase its capital stock to $50,000 at any time.

The Greenwood Process-Machine Co. has been incorporated at Greenwood, Ind., to manufacture and sell the Jennings process-machine, a device for cooking fruits. Incorporators are: L. Ert Slack, president; Byron Jennings, secretary; and William A. Bridges, treasurer. Capital, $20,000.

The Prosser Engineering Co., Chicago, Ill., has been incorporated with a capital of $20,000, to manufacture machinery, Incorporators are: Henry Pope, Edward Rector and Joseph G. Prosser.

The Hiende Foundry Co., Hanover, Pa., has been incorporated and will do a general foundry business.

The American Twist Drill Co. has been incorporated at New York with a capital of $50,000. The company will manufacture tools. Incorporators and directors for the first year are: R. L. Barclay, C. E. Francis, Brooklyn; and A. H. Skillings, New York.

A new company, known as the Parmelee Wrench Co., has been incorporated at Chicago with a capital of $2,500, to manufacture machinery and implements. Incorporators are: Justin Parmelee, Roy Parmelee and J. Charles Dillenbeck.

The Berskhire Iron Works, Reading, Pa., have been incorporated to manufacture iron and steel pipes, structural iron and plates. The capital is $5,000, which will be increased to meet the demands of the company. The directors are: Robert E. J. Corcoran, Brooklyn; Edson Bisbee, Ralph Bisbee and George N. Hamlin, New York; H. Y. Yost and P. L. Sieber, Reading.

The Montgomery Pick & Tool Co., with a capital of $50,000, has been incorporated at New York. Incorporators and directors for the first year are: G. F. Johnson, E. R. Olcott and A. Staszewski, all of New York.

J. A. Howe Jr., J. Wiechman and Frank Shup, all of Albany, N. Y., have incorporated the Frank Shup Mfg. Co., Albany. The new company has a capital of $50,000 and will manufacture machinery.

The Aerating Machine Mfg. Co. has been incorporated at New York to manufacture machinery. The company has a capital of $300,000. Incorporators and directors for the first year are: A. M. Sloss, M. M. Sloss and J. S. Loveheim, all of New York.

The Isthmian Canal Commission, Washington, D. C., has sent out proposals asking for bids on machine tools, machinery, hand cars, leather belting, rope, canvas and rubber hose, and miscellaneous supplies for use at the Isthmus. Any one interested may get copies of the specifications by addressing the Isthmian Canal Commission, Washington, D. C.

A certificate of incorporation of the Perkins Corporation, of Hartford, Conn., with a capital stock of $20,000 for the purpose of manufacturing, using and selling and making contracts for machinery, tools and fixtures, has been filed with the secretary of state of Connecticut. The incorporators are: Charles G. Perkins, Charles A. Clark and P. H. Woodward.

The Paris Bridge & Supply Co., Paris, Ill., capital $25,000, has been incorporated to manufacture structural iron work. The incorporators are: W. F. Gaumer, Paul Burkey and George E. Zimmerly.

The Coffee Machine Co. has been incorporated at Richmond, Va., to buy and sell machinery of all kinds, manufacture, repair, etc. Capital $15,000. The incorporators are: W. J. Whitehurst, president, Richmond, Va.; R. A. Coffee, treasurer, Henrico county, Va.; B. M. Coffee, secretary, Henrico county, Va.

Arrangements are being made for the enlargement of the Chicago, Burlington & Quincy shops at Hannibal, Ill. It is announced that considerable new machinery will be purchased.

The Cosey Barb Wire Reel Co., Sterling, Ill., has been organized with a capital of $10,000, for the purpose of manufacturing the Cosey barb wire reel and other specialties. The stockholders have elected the following officers: President and general manager, H. M. Cosey; vice president, Jonathan Franz; secretary, Charles F. Owens, and treasurer, Gerhart Cassens. At present the manufacturing is being done by contract, but the company expects to erect a plant at a later date.

The Riverside Iron Works have been incorporated at Chicago with a capital of $20,000. Incorporators are: Theodore Kenney, Emil Schlinger and Rudolph Kaufmann.

Application for a charter has been made by the Chattanooga Iron & Wire Works, Chattanooga, Tenn. Incorporators are: Bruce R. Guthrie, G. W. Corey, S. E. Gladen, S. M. Hunt and J. D. Wilkins. Capital $10,000.

The Continental Engine Co., Chicago, has been incorporated with a capital of $10,000, to manufacture engines and motors. Incorporators are: G. M. Etzcorn, E. E. Hort and Harris F. Williams.

New Construction:—

The Falls Hollow Staybolt Co., Cuyahoga Falls, O., is just completing additions to its plant which will more than double the capacity. The company has just received an order from the Baldwin Locomotive Works, Philadelphia, for several thousand feet of double refined charcoal iron hollow bars.

The Exeter Machine Works, manufacturer of hoisting engines and elevating and conveying machinery, Pittston, Pa., announces that it will erect a new machine shop 80 x 250 ft.

and a new power house including electrical equipment. An air compressor and a large assortment of machine tools, as well as a 20-ton electric traveling crane for the machine shop, will also be required.

The Barney & Smith Car Co., Dayton, O., has completed plans for the erection of an addition to its plant, at a cost of $350,000.

Compton & Knowles, Seventeenth street and Pennsylvania avenue, Philadelphia, will build an addition to their foundry 90 x 103 ft., two stories.

The Allis-Chalmers Co. will erect an addition to its Bullock plant at Norwood, Cincinnati.

The Beall Non-Pounding Frog & Crossing Co., South Bend, Ind., will erect a plant in the spring to manufacture the Beall crossing frog and a line of railway supplies.

The Crawford-McCrimmon Co., Brazil, Ind., will erect a foundry 150 x 50 ft., with complete modern equipment.

Plans are now being drafted for the new plant of the Muskegon Boiler Works, Muskegon, Mich. It is expected that building operations will be begun in the spring.

The house warming at the plant of the Consolidated Wagon & Machine Co., Idaho Falls, Idaho, Jan. 6, was attended by 5,000 people, many of whom came from neighboring towns and some from distant points. Less than four months ago a disastrous fire occcurred at Idaho Falls, destroying the greater part of the business district. The heaviest loss was sustained by the Consolidated Wagon & Machine Co. While the fire was in progress the directors authorized the erection of a new plant.

The William J. Oliver Mfg. Co., Knoxville, Tenn., has purchased additional land and will double the capacity of its foundry.

The erection of the works of the Canada Car Co., Montreal, is progressing rapidly. The foundations are finished and the steel work is being put in position. It is expected that the buildings will be ready for the installation of machinery about May 1 and that car building will be under way by Aug. 1. The main building, with the car shop proper, will be 1,000 ft. long by 280 ft. wide. The height of all the shops will be 32 ft., the walls to be of concrete. The floor area of the various shops is to be as follows: Machine shop, 129 by 70 ft.; brass foundry, 86 by 70; forge and smith shop, 301 by 70; gray iron foundry, 215 by 70; wheel foundry, 215 by 184; planing mill, 387 by 70; matching room, 769 by 70; cabinet pattern shop and carpenters' department, 236 by 70; trimmers and upholsterers, 172 by 70; freight car erection shop, 301 by 70; wheel, axle, truck and bolster shops, 301 by 70; freight car, paint shops, 322 by 70; store house, 120 by 80 ft. Most of the shops will be served by electric overhead cranes, and tracks will be laid throughout the yard so as to entail the minimum amount of movement. The plant, entirely self-contained, will manufacture everything from the raw material, lumber and steel. The initial capacity of the shops will be about ten passenger cars a month and twenty freight cars per day, with their corresponding trucks. While wooden cars will be the first product, provision has been made by the company to manufacture composite wood and steel, and all-steel cars, pressed steel or structural shapes, street cars, etc.

The Palmer Boiler Co. will erect a plant at Armourdale, Kan. It will have a frontage of 100 ft. and will extend back 150 or 200 ft.

Beck Bros., machinists and patternmakers, Bellaire, O., have designed and completed the construction of a gas engine and expect to build a small plant to manufacture it.

The Ste. Claire Mfg. Co., Detroit, Mich., will erect a new building 50 x 130 ft.

The Canadian Pacific railroad has just completed a very large and thoroughly equipped car shop plant near Montreal. The plot of ground is 4,700 ft. long and 200 ft. wide. The principal buildings are: Locomotive shop, 163 x 1,168 ft.; general stores, 85 x 594 ft.; iron foundry, 122 x 342 ft.; wheel foundry, 107 x 187 ft.; smith and forge shop, 300 x 433 ft.; pattern shop and store, 50 x 232 ft.; car machine shop, 130 x 288 ft.; frog shop, 116 x 263 ft.; truck shop, 82 x 434 ft.; freight car shop, 107 x 540 ft.; two passenger car shops, each, 100 x 672 ft.; power house, 101 x 168 ft.; office, three stories, 57 x 81 ft.

The Jewett Stove Co., which recently purchased the plant of the American Cabinet Co., Tonawanda, N. Y., has begun the construction of a foundry which will be ready for operation by May 1.

Fires and Accidents :—

The National Machine Works, Weed and Hawthorne streets, Chicago, were destroyed by fire on the night of Jan. 11. The loss is estimated at $70,000.

The Nacogdoches Iron Foundry, Nacogdoches, Tex., the property of Y. F. Mize, was burned Jan. 7; loss $1,000.

The plant of the Kewanee Mining & Mfg. Co., Kewanee, Ill., was destroyed by fire Jan. 7. Loss was $180,000; insurance, $70,000.

General Industrial Notes :—

The Jewett Car Co., Newark, O., employing 500 men, may leave Newark and locate in some city in the South. Five years ago the company located in Newark after signing an agreement, in return for a liberal bonus, to employ 500 men throughout the period of five years. The period is now expired and Birmingham and other cities are endeavoring to have the company move.

Chicago capitalists have made the proposition to the Commercial Club of Peru, Ind., for the rebuilding of the plant of the Peru Steel Casting Co., recently burned. Coupled with the proposition are some details that are not acceptable to the people of Peru, but negotiations are still pending which may result in the elimination of the objectionable features so that an agreement can be reached.

The Standard Wheel Co., Indianapolis, has shut down its plant until new boilers can be installed. Insurance companies ordered the company to reduce the pressure and it was decided to shut down.

The Greenfield Bridge & Sewer Co., Greenfield, Ind., recently incorporated, will repair steel bridges and steel sewers and manufacture small steel bridges.

The two idle blast furnaces at the Minnequa plant of the Colorado Fuel & Iron Co. will be put into commission Jan. 21. One of the stacks has been relined.

Milwaukee is now the official headquarters of the Allis-Chalmers Co. The only department left in Chicago is that of the mining machinery, but a branch office will be maintained there. The change has been made gradually since B. H. Warren was made president of the company about a year ago.

The Wray Machinery Co., Detroit, recently incorporated, is a continuation of the partnership under the same name.

The Clark Machine Co., St. Johnsville, N. Y., recently incorporated, was organized for the purpose of continuing the manufacture of gasoline engines, steam engines and threshers, formerly conducted by the Rumsey-Williams Co. The plant of the latter company is complete and no new construction is contemplated.

The Cincinnati Planer Co., Cincinnati, O., has increased its capital stock to $200,000 and elected the following officers: C. H. M. Atkins, president; B. B. Quillen, secretary and treasurer; Geo. Langen, general superintendent. These officers, together with E. N. Atkins and C. M. Quillen, make up the directory. W. H. Burtner, former president of the company, retires on account of poor health. Mr. Atkins, the new president, is also president of the Warner Elevator Co. and the Norwood National Bank, and is connected with several other leading concerns of Cincinnati.

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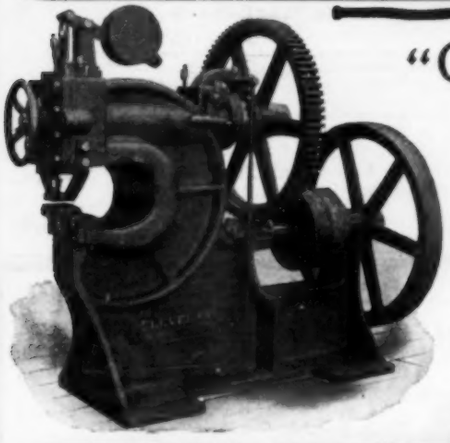

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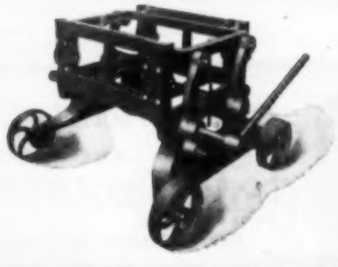

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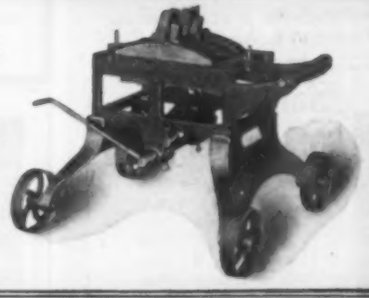

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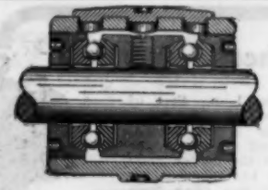

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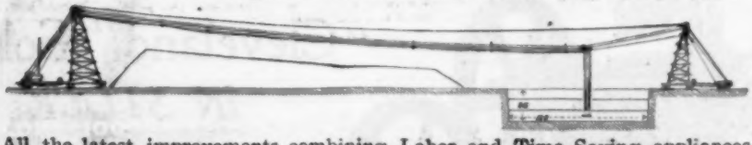

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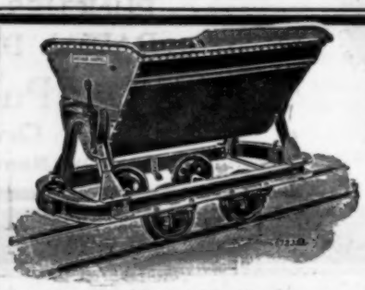

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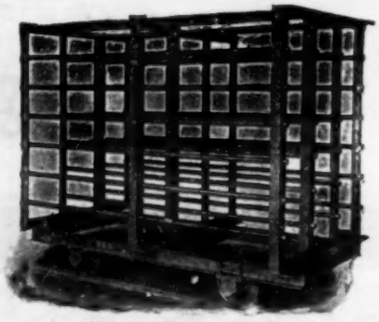

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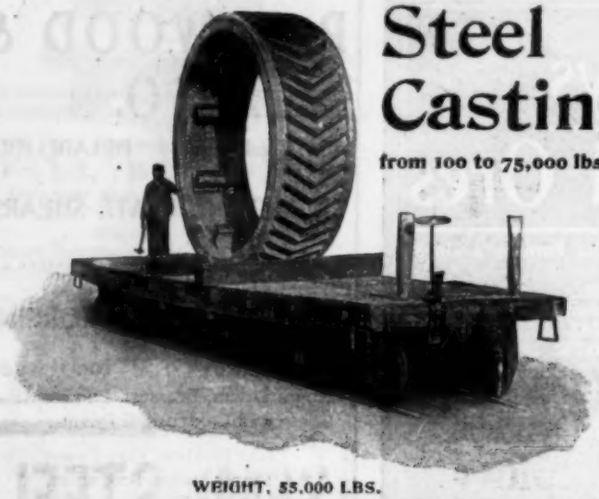

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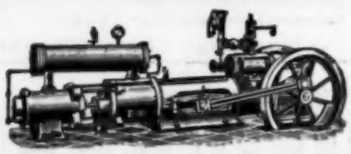

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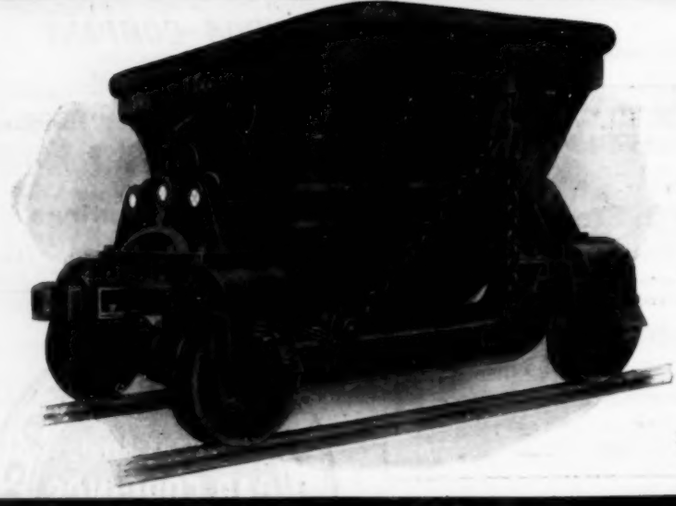

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